

# COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, Editor

Volume 22

NEW YORK, THURSDAY, OCTOBER 12, 1922

Number 15

## *The Railroads and Coal*

**A**DEQUATE coal for this winter in this country depends on the railroads. The deficiency in anthracite cannot be made up by calling on the mines for extraordinary production, for these mines have no surplus capacity and are short of mine labor. But soft coal can and must be substituted for hard coal. The soft coal that will be required for this purpose and to fill empty bins and stockpiles, supply the Northwest and meet current requirements may be had and still more if the railroads are able to supply the empty cars, haul them to market when loaded and return the empties.

The President, Secretary Hoover and Federal Fuel Distributor Spens have joined in saying that transportation is the key to the coal situation this winter. The shortage, whatever it may be, is due to the coal strike, for which the railroads were in no way responsible, and to the rail strike, for which the coal miner may have had a degree of responsibility. The fact remains that, whoever may be at fault for the present lack of coal, the limitation of transportation is the only bar to recovery of that lack.

What right has the public or the coal industry to ask that the railroads give coal preference, to set aside other and more profitable freight in favor of coal? If the question be turned only on the basis of a fair proportion of annual transportation, the coal industry is warranted in demanding unusual preference at this time. In the first nine months of this year the total loading of freight was some 2,000,000 cars in excess of the same period of last year. Grain and grain products, live stock, coke, forest products and ore all show small increases, and loadings of merchandise and miscellaneous freight were nearly three million cars in excess of last year. The only commodity shown by the figures of the American Railway Association to have declined is coal, which stands a million cars below 1921.

While portions of the coal industry were at a standstill other industries were at work. In the first nine months of 1920 and 1921 coal cars represented 20.3 and 21.7 per cent respectively of the total; this year but 15 per cent. The ratios for 1920 and 1921 may be taken to show the relative proportions of total business sustained by coal when things are in balance. When one-fifth of the cars of freight loaded contain coal, then industry is marching ahead, four abreast. Coal stumbled this year; it is not in step with the rest of the country. Business cannot proceed normally until coal catches up in the procession.

One way to make up the arrears is to let the railroad business proceed as usual, coal getting what transportation it can and coal-consuming industry bidding for the available supply, shutting down when it cannot pay the price—a disorderly and unnecessary method. Or the railroads can hold back the other marchers, giving to coal the preference that will bring its percentage of the whole from the present 15 to the needed and normal 20.

This is the sensible, orderly process—the one that President Harding has urged on the railway managers.

If the carriers will conscientiously divert motive power and cars to the movement of coal they can raise the level of production to 12,000,000 tons per week of bituminous coal and possibly 2,000,000 tons of anthracite. Then, if the commercial interests will call off their buyers' strike and take the extra tonnage into storage, the situation can be tranquillized.

Unsatisfied demand can be impounded for a time, but eventually the dam will break. The machinery of the Fuel Control Act will be found insufficient to handle the flood when the dam breaks. From now forward the responsibility is the railroads'.

## *Ohio Tries Price Fixing*

**P**PRICE fixing by law is a doubtful enterprise at best and full of possibilities for failure; but Ohio is attempting it. The ambition is laudable enough, but there is an insurmountable difficulty. The state can fix mine prices on Ohio coal but it cannot interfere if Ohio producers choose to sell all their coal outside the state, or in whatever available market pays best, leaving Ohio dealers to buy outside coal wherever they can at whatever prices prevail. The fixing of retail prices within the state would be no material protection of the public in a case such as this, for if they do not allow a fair margin above mine price plus freight and cost of handling, then the dealer simply withdraws, leaving the Ohio public without coal.

Naturally there are substantial and conscientious producers in Ohio who will consider it good business to look after the most urgent needs of their old reliable trade in Ohio, whatever the prices, but this will not be meeting the coal demands of Ohio. That state may suffer more by its own weapon of protection than it would have suffered had it not armed. Indiana made a fruitless effort of the same sort in 1920.

## *Encouraging Signs at Cleveland*

**N**O ONE need be surprised that immediately after concluding arrangements at Cleveland for negotiations for a new wage contract next year, the United Mine Workers let it be known that they would demand a continuation of the present scale for two years from next April, the six-hour day, and five-day week. To maintain their prestige it is essential for the officers of the union to convey to their constituents that their interests have not been forgotten, that there is something to look forward to next time.

The union that met the operators in Cleveland last week is the same that won the strike this summer; it has had no change of heart. The provisions in its constitution demanding the "full social value" of its labor and the six-hour day and five-day week have not been

cancelled. The union is no less militant for its victory.

Encouragement is found, however, in the fact that at Cleveland last week the operators came in from the crossroads and bypaths to a common avenue of approach to the problem of meeting the miners. They were able and did agree to do certain things on which a few weeks ago it seemed to many they would never reach common ground. The most important of all is that they have almost to a man met and carried forward the spirit of the original Cleveland agreement. The simple fact of having started the processes of future wage negotiations on what now appears to be a sounder basis than ever before is a matter for congratulation all around. The militancy of the miners is a part of their usual play. The real test of their good faith will come when actual negotiations are undertaken.

### *How Shall the Public Be Protected?*

IN THE current issue of the *Atlantic Monthly*, Director Smith of the Geological Survey, writing to the thinking consumer on "What Coal Means to Us," says: "It is society that gives value to coal and opportunity to the coal industry." At our invitation he expanded that thought in an article in *Coal Age* last week (Oct. 5, page 535), in which he charged that the coal operators have been blind in one particular—"They have failed to see their duty to the general public." In large measure this is the burden of thought of present-day critics of the coal industry.

The production and distribution of coal is still private enterprise. Management, whose voice is the expression of the industry, owes certain obvious duties to stockholders, to customers and to labor. If in the sale of its product the coal company charges only such price as will return a reasonable wage to labor and a reasonable profit to stockholder, then that company is most assuredly a desirable member of society. Transgression of any of these duties brings its own measure of censure. For the industry as a whole the part of the consumer is taken by the general public.

The majority of coal producers and distributors so conduct their business that they maintain the good will of their customers, if for no other reason than that this good will is their chiefest asset in business. Every stable coal company has its back log of steady, dependable trade, served year after year, zealously guarded, protected and satisfied. In these individual relations of seller and buyer there is a minimum of violation of the tenets of good citizenship. But the relation of the coal industry to the public is the sum of all relationships and in this whole there are many variations from the general rule. It is largely the advantage taken by the intermittent producer, and by the regular producer with his transient trade, during disturbed market conditions that has given color to the charge that the coal industry has failed in its duty to the general public. The many are called on to account for the transgressions of the few.

Price and supply are the two points of contact of the public with the coal industry. In the last 25 years there have been four marked peaks in the price curve, corresponding to shortages in supply, excluding, of course, the periods of war control of both. Two of these have attended protracted strikes of coal-mine labor, in 1903 and 1922; one was an after-effect of a coal strike accentuated by a railroad strike, in 1920, and the other was the development of extraordinary demand when stocks

were low in 1917. In the intervening periods the bituminous-coal industry has served the general public with ample coal at the lowest prices in the world. Three of these upheavals have been in the past 6 years, a part of the war turmoil that has, and is yet, shaking the world.

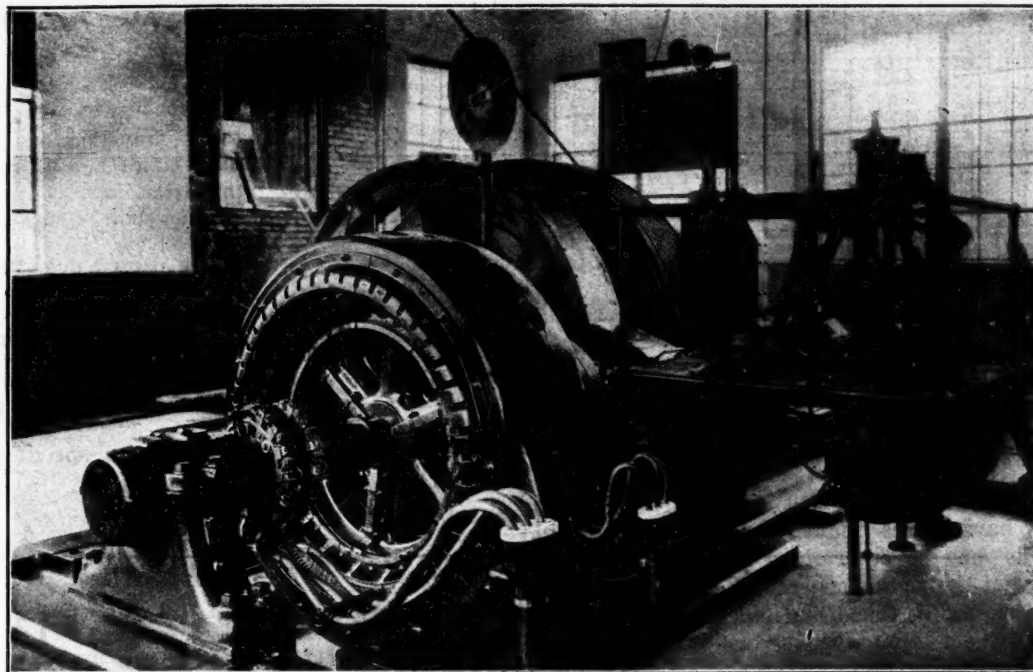
If the production and distribution of coal were public business the peaks of high prices and corresponding profits would be leveled off and the more frequent hollows of low prices and corresponding losses filled up, at public expense. Can it be that the duty of the coal industry to the general public is to wipe out its best profits and continue to absorb its major losses? That certainly is not in the public interest in the long run. It is plainly of far more advantage to the coal producer than to the coal consumer to maintain steady operation at moderate price and profit than to "vibrate between bankruptcy and high profits." What Mr. Smith and others charge as the duty of the coal industry to the general public is first of all the duty of the coal men to their own industry.

We cannot but conclude that it is not the blindness of the coal operator but his impotence that prevents him from making his industry function in a more ideal manner. There is no such thing as majority rule in either the soft- or the hard-coal industry. The Sherman law, which regulates the coal industry, is more stringent than any proposed by modern reform legislators. It says that no two in the business shall get together in any way to regulate the trade, either for or against the interests of the public. There is no method, either direct or devious, by which the "good" operator or wholesaler can control the "bad." There have been occasions, not without notable results, when the organized voice of the coal industry has been raised to stop the rising price of coal.

Summed up, Director Smith's indictment of the coal industry rests on the assumption that coal is a public utility and that without being so declared by law it should function as such. We submit that it is too much to expect that some ten thousand individuals engaged in the private business of mining and distributing coal should march up to the counter every time the price of their product passes a certain profitable point, and voluntarily rebate to the public the increment of profit, large or small, as it may be, that is offered by circumstances not of their making. Considered as a whole the reputation of the industry in profit taking has not always been creditable, but if one will but examine individual records he will find that many—the majority as respects tonnage if not numbers—have a definite sense of responsibility toward that part of the general public with which they have contact—their customers—and that they have lived up to that responsibility even as Director Smith would have them do.

Coal operators are fast developing a national consciousness of their collective relationship to society; they are learning self-government. For four years they have been on the defensive against "an unfriendly press, a distrustful public, and the threat of socialistic legislation." We have no doubt that every honest-minded coal man will agree with Herbert Hoover in his New York address of Sept. 12, that "When these various rights [to strike, to lockout, to work or not to work, etc.] infringe upon the public right, then the dominant right is the public right." The points yet to be decided concern the methods by which the public right shall be protected without socializing a basic industry.





## Calculation of Horsepower Required for Unbalanced Uncounterweighted Hoist in Shallow Shaft\*

Radius of Gyration and Radius of Drum and Their Relations—Average Moments—Frictional Resistance—Acceleration and Retardation Moments and Horsepowers—Horsepower Torque—Energy in Hoist and Check on Result

BY F. L. STONE†  
Schenectady, N. Y.

IN THIS article will be elaborated the main calculations for the selection of the machinery for hoisting in a shallow shaft unbalanced and without counterweight. Under the classification of "shallow shaft" may be included all those which have hoists the total travel of which is 300 ft. or less. The hoist thus to be considered is what would ordinarily be termed a "supply" or "man-and-material" hoist.

The capacity of this machine will be based on its ability to raise rock, and, as stated, the assumption will be that it is to be operated unbalanced and without a counterweight. A later article will deal with the same hoist using a counterweight and when serving a double-compartment shaft with cages in balance. The following conditions are assumed:

Total lift.....	250 ft.
Weight of cage.....	9,000 lb.
Weight of car.....	2,300 lb.
Weight of rock.....	8,000 lb.
Trips per hour.....	60
Rest, top and bottom.....	each 7 sec.
Rope.....	1½ in. diameter, weight 2 lb. per ft.
Drum, cylindrical.....	6 ft. diameter with 2 ft. face
Weight of rotating parts at rope center.....	17,000 lb.

It might be well at this point to discuss in some detail

the various ways in which the weight of a rotating mass may be manipulated. The radius of gyration is such a radius that if the entire weight as recorded by the scales could be located at its extremity this weight multiplied by the square of its velocity ( $2\pi rn$ )<sup>2</sup> when rotating about its axis, and divided by  $2g$  would represent the stored energy in foot pounds.

The formulas for determining the radius of gyration of bodies of most ordinary shapes may be found in almost any standard engineering handbook. For example, consider a plate wheel weighing 10,000 lb. and 8 ft. in diameter. The radius of gyration of such a

wheel =  $\sqrt{\frac{r^2}{2}} = 0.707r$  where  $r$  = the outside or extreme radius.

In the example the radius of gyration would be  $4 \times 0.707 = 2.828$  ft. This means that if a ring of no thickness could be made 5.656 ft. in diameter and weighing 10,000 lb. it would have the same stored energy when rotating as has the plate wheel.

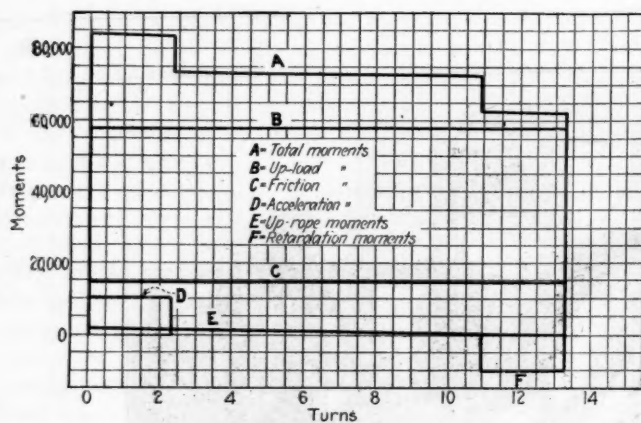
The  $wr^2$  of such a wheel would be

$$10,000 \times 2.828^2 = 80,000 \text{ ft.-lb.}^\ddagger$$

\*Other articles on hoist design by F. L. Stone may be found in *Coal Age*, Vol. 8, p. 916, and Vol. 9, p. 923.

†Power and mining engineering department, General Electric Co., Schenectady, N. Y.

‡This figure is based on the more accurate figure for 2.828, which in the calculation is carried to an infinite number of decimal places instead of only three.



#### MOMENTS IN FOOT-POUNDS, UNBALANCED HOISTING

These are plotted on the basis of turns of the drum. Even when the hoist is being retarded the total moments are considerable, the friction and up-load moments being so large that the reduction due to retardation has little effect on the total.

The  $wr^2$  is of great value when considering rotating masses, for, having this quantity, the effective weight at any radius may be determined by dividing the  $wr^2$  by the square of the radius at which the effective weight is required. Thus, in the drum under consideration in the above problem, the effective weight is given as 17,000 lb. at the rope center. The  $wr^2$  of this drum is  $17,000 \times 3^2$  or 153,000 ft.-lb.

This, incidentally includes the gear.

The radius of gyration of a cylindrical hoist drum, break tread and gear is about 80 per cent of the outside radius, and 80 per cent of 3 is 2.4; therefore the actual weight of the drum and its attached parts as registered by the scale would be about

$$\frac{153,000}{2.4^2} = 26,500 \text{ lb.}$$

As an illustration of the accuracy of the above calculation assume that the drum and parts are turning at 100 r.p.m. or 1.6666 r.p.s. The stored energy then will be

$$\frac{mv^2}{2} = \frac{wv^2}{2g}$$

$v$  being the velocity in ft. per second at the radius at which the weight is taken,

$$\frac{17,000 \times (2\pi \times 3 \times 1.6666)^2}{32.2 \times 2} = \frac{17,000 \times 31.4^2}{32.2 \times 2} = 260,500 \text{ ft.-lb.}$$

Using the actual weight and the radius of gyration above found

$$\frac{26,500 \times (2\pi \times 2.4 \times 1.6666)^2}{32.2 \times 2} = \frac{26,500 \times (25.15)^2}{32.2 \times 2} = 260,500 \text{ ft. lb. approximately.}$$

The above is, of course, elementary and intended only to refresh the memories of those who have not used these fundamental formulas for years. It shows how, given the  $wr^2$ , the effective weight can be found for any radius without knowing the actual radius of gyration.

To proceed with the calculation:

$$\text{The time required for one round trip} = \frac{3600}{60} = 60 \text{ sec.}$$

$$\text{Rest, top and bottom} = 7 + 7 = 14 \text{ sec.}$$

$$\text{Total running time up and down} = 60 - 14 = 46 \text{ sec.}$$

$$\text{Running time one way} = \frac{46}{2} = 23 \text{ sec.}$$

Assume 6 sec. acceleration and 6 sec. retardation

$$\text{Number of turns of drum} = \frac{250}{6\pi} = 13.26$$

Consequently the revolutions per second or  $v$  at full

$$\text{speed} = \frac{D}{t - \frac{t_a}{2} + \frac{t_r}{2}}$$

where  $D$  = the distance travelled or total turns of drum;  $t$  = total running time;  $t_a$  = time of acceleration;  $t_r$  = time of retardation.

This is derived as follows:

$$\frac{vt_a}{2} = \text{space passed over during acceleration.}$$

$$\frac{vt_r}{2} = \text{space passed over during retardation.}$$

$$D - \left( \frac{vt_a}{2} + \frac{vt_r}{2} \right) = \text{space passed over at full speed.}$$

$$T - (t_a + t_r) = \text{time of full-speed running.}$$

Then

$$\frac{D - \left( \frac{vt_a}{2} + \frac{vt_r}{2} \right)}{T - (t_a + t_r)} = v$$

$$D - \frac{vt_a + vt_r}{2} = vt - v(t_a + t_r)$$

$$2D - (vt_a + vt_r) = 2vt - 2v(t_a + t_r)$$

$$2D = 2vt - v(t_a + t_r)$$

$$D = vt - \frac{v(t_a + t_r)}{2}$$

$$= v \left( t - \frac{t_a + t_r}{2} \right)$$

$$v = \frac{D}{t - \frac{t_a + t_r}{2}}$$

In the present case as  $D = 13.26$  turns

$$\frac{13.26}{23 - \frac{6 + 6}{2}} = \frac{13.26}{17} = 0.78 \text{ r.p.s.}$$

The number of turns passed over during acceleration

$$= \frac{vt}{2} = \frac{0.78 \times 6}{2} = 2.34.$$

Similarly the turns passed over during retardation

$$= \frac{0.78 \times 6}{2} = 2.34.$$

The moments will be determined as follows: Rock, 8,000 lb.; car, 2,300 lb.; cage, 9,000 lb.; total, 19,300 lb.

$$\text{Turn 0} \quad 19,300 \times 3 = 57,900 \text{ ft.-lb.}$$

$$\text{Turn 13.26} \quad 19,300 \times 3 = 57,900 \text{ ft.-lb.}$$

Rope (1½ in. at 2 lb. per lineal foot)

$$\text{Turn 0} \quad 250 \times 2 \times 3 = 1,500 \text{ ft.-lb.}$$

$$\text{Turn 13.26} \quad 0 \times 2 \times 3 = 0 \text{ ft.-lb.}$$

$$\text{Turns} \quad 0 \quad 13.26$$

$$\text{Load} \quad 57,900 \text{ ft.-lb.} \quad 57,900 \text{ ft.-lb.}$$

$$\text{Rope} \quad 1,500 \text{ ft.-lb.} \quad 0 \text{ ft.-lb.}$$

$$\text{Total} \quad 59,400 \text{ ft.-lb.} \quad 57,900 \text{ ft.-lb.}$$

The value to be assigned to friction will have to be assumed, as there are no reliable test data available to my knowledge. Experience has shown that 80 per cent of the average net moment (for single gear reduction) is sufficient. In the case of an unbalanced hoist this efficiency probably is a little low but safe.

$(57,900 + 59,400) \div 2 = 58,650$  = average moment  
 $58,650 \div 0.8 = 73,300$  = average moment including friction. Deducting the average moment, which is 58,650, leaves the friction, which is therefore 14,650. Net moments including friction then become:



Turns	0	13.23
Load	59,400 ft.-lb.	57,900 ft.-lb.
Friction	14,650 ft.-lb.	14,650 ft.-lb.
	74,050 ft.-lb.	72,550 ft.-lb.

Acceleration and retardation are calculated as follows:  
The revolutions of the drum at full speed = 0.78 per sec.

Velocity in feet per second of moving parts at end of acceleration =  $0.78 \times 6 \times \pi = 14.68$  ft. per sec.

Force = mass  $\times$  acceleration

Acceleration ( $a$ ) =  $\frac{v}{\text{Time}}$ ; Mass =  $\frac{w}{g}$ ;  $a = \frac{14.68}{6} = 2.446$  ft. per sec. per sec.

As the drum is cylindrical and its weight is given as the effective weight at the rope center, all the moving parts may be considered as a whole and the acceleration force calculated at one operation.

Cage.....	9,000 lb.
Car.....	2,300 lb.
Rock.....	8,000 lb.
Rope (250 ft. in shaft and 200 ft. between the cage and the drum when the cage is at the top of the shaft).....	900 lb.
Total.....	20,200 lb.
Drum.....	17,000 lb.
Head sheaves.....	7,000 lb.
Total.....	44,200 lb.

Accelerating force =  $\frac{44,200}{32.2} \times 2.446 = 3,360$  lb.

As this force is applied at the drum surface, the moment will be

$$3,360 \times 3 = 10,080 \text{ ft.-lb.}$$

Retardation is to be accomplished in the same length of time and, as the  $v$  of all parts is the same, the retardation force and moment will be the same as that of acceleration, except that, as energy is being given up, the value will have a minus sign.

Turns.....	FINAL MOMENTS					
	0	2.34	2.34	10.92	10.92	13.26
	74,050	73,790*	73,900*	72,800*	72,810*	72,550
	10,080	10,080	—	—	—10,080	—10,080
Total moment.....	84,130	83,870	73,900	72,800	62,730	62,470
Horsepower.....	750	747	658	648	559	556
Time, sec.....	0	6	6	17	17	23

\* From plotted curve.

Having determined the moments and plotted their values it is necessary only to change the moments to horsepower and plot against time.

The horsepower may be determined by substituting in the equation

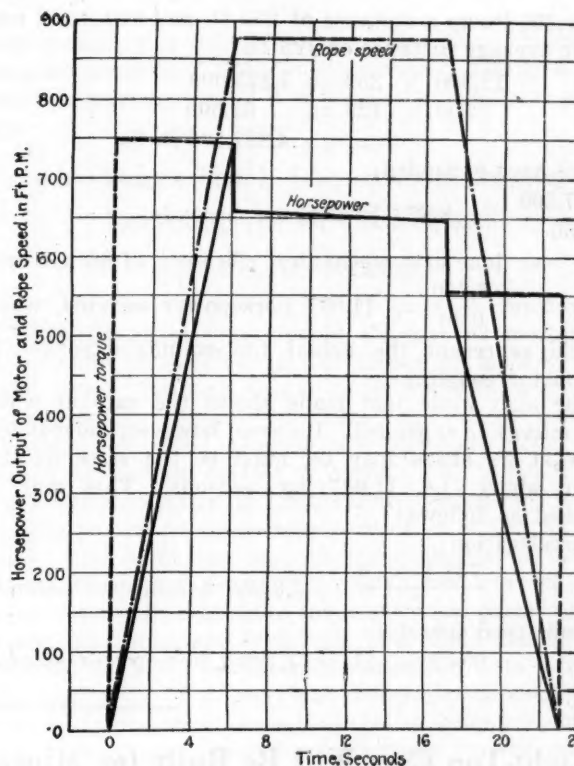
$$HP. = \frac{2\pi \times \text{r.p.s.} \times M.}{550}$$

This formula is derived as follows:

$$\begin{aligned} HP. &= \frac{\text{Force} \times \text{velocity in feet per sec.}}{550} \\ &= \frac{\text{Force} \times 2\pi r \times \text{r.p.s.}}{550} \\ &= \frac{\text{Force} \times r \times 2\pi \times \text{r.p.s.}}{550} \\ &= \frac{M. \times 2\pi \times \text{r.p.s.}}{550} \end{aligned}$$

Turns	Time, sec.	Horsepower
0	0	750†
2.34	6	747
2.34	6	659
10.92	17	650
10.92	17	553
13.26	23	550†

†These values are not actual horsepower, as the speed is 0 at these points, but they indicate values proportional to the torque. This value is, therefore, called horsepower torque. In other words, the motor must develop such a torque that if it were running at full speed it would produce this horsepower.



HORSEPOWER-TIME CURVE OF DUTY CYCLE,  
HOIST NOT BALANCED

The horsepower used and the horsepower demanded are different quantities, for at the start the horsepower used is zero but the hoist must be designed with that point in mind, for the horsepower torque at that point is at a maximum.

Having plotted the curves of moments and horsepower it might be well to consider what they mean. The moment curves are self-explanatory and mean that at each turn of the drum an indicated torque must be applied to the shaft. The horsepower curves, however, mean a little more when analyzed. As a help in discussing the duty cycle the following definition of terms used may be in order.

Force is pressure, pull or resistance to motion in the line of motion and its unit is the pound. Velocity is the rate of motion and its unit is one foot per second. Work is the product of force in pounds, resisting motion, multiplied by the distance traveled in feet, the unit being the foot-pound. Energy is the ability to do work. It may be potential, that is, the energy stored in a body due to its position, such as a weight carried to an elevation; or it may be kinetic, or that due to the motion of the body. The unit is foot-pounds as in the case of work. The formula for the stored energy in a moving body is  $\frac{mv^2}{2} = \frac{wv^2}{2g}$ . Power is the rate at which

work is done. The most common unit is the horsepower, which is equal to 550 ft.-lb. per second. Thus, if 10,000 ft.-lb. of work is to be done in, say, 5 seconds at a constant rate, this rate will be 2,000 ft.-lb. per second or  $\frac{2,000}{550} = 3.64$  hp. If the same work is done in 2 seconds it will have to be done at the rate of 5,000 ft.-lb. per second or  $\frac{5,000}{550} = 9.1$  hp.

In the problem just solved we have made a duty cycle, plotting horsepower against time.

In lifting the cage, car, rock and rope we have expended much energy; that is we have raised a weight

of 19,300 lb. up a distance of 250 ft. and 500 lb. of rope up an average distance of 125 ft.

$$\begin{array}{r} 19,300 \times 250 = 4,825,000 \\ 500 \times 125 = 62,500 \\ \hline 4,887,500 \text{ ft.-lb.} \end{array}$$

or we have expended

$$\frac{4,887,500}{550} = 8,870 \text{ horsepower seconds}$$

This was done at a mechanical efficiency of 80 per cent.

Therefore,  $\frac{8,870}{0.80} = 11,087$  horsepower seconds, which should represent the actual foot-pounds expended at the motor coupling.

The duty cycle just made shows the rate at which this energy is expended. Its area, however, independent of what its shape may be, must be the same as that given above, i.e. 11,087 hp. seconds. This may be checked as follows:

In acceleration

$$\frac{748.5 \times 6}{2} = 2,245.5 \text{ horsepower seconds}$$

In full-speed operation

$$654.5 \times 11 = 7,199.5 \text{ horsepower seconds}$$

In retardation

$$\frac{551.5 \times 6}{2} = 1,654.5 \text{ horsepower seconds}$$

Total energy in one hoist

$$= 11,098.5 \text{ horsepower seconds}$$

Average weight

$$19,300 + 250 = 19,550 \text{ lb.}$$

Total energy in one hoist

$$\frac{19,550 \times 250}{550 \times 0.8} = 11,100 \text{ horsepower seconds}$$

Which may be considered a check within the limits of accuracy of the slide rule.

The duty cycle shows more clearly than anything else the way the demands come on the motor, and from it the rating of this machine may be determined.

The data selected for this example call for a rather large motor and would hardly be considered a practical operating condition. If such a quantity of material was really to be taken out of a shaft, the hoist without doubt would be provided with a counterweight.

The head piece to this article shows a 700-hp. 400-r.p.m., 2,200-volt hoist installed at the plant of the Union Collieries Co., of Pittsburgh, Pa.

## Eight-Ton Cars Will Be Built for Mines

FOR many years past, the railroads of the United States have continually increased the size of their rolling stock. They have built larger and larger locomotives and cars. Back in 1870, only about fifty years ago, coal was not infrequently shipped in small four-wheeled cars, each holding about five tons. Today steel hoppers of 140,000 lb. capacity are not uncommon. This increase has been made necessary by the larger and ever larger tonnage that must be carried over one set of rails.

To a lesser extent the same tendency is manifest in the mines. The output of individual operations has been continually increased. Almost every mine is now producing more coal than in the past. To meet this increased output, mine locomotives of various types have been designed, each succeeding model being capable of pulling a greater number of cars at a higher speed than its predecessors, thus adding capacity to the haulage roads already existing. Mine cars likewise have increased in size. With a larger car it is unnecessary for the mining company to furnish each man with as many wagons as were formerly required, thus reducing the number to be gathered and hauled in any one mine in order to maintain a given capacity and reducing the number of times during any one day when the miner must wait for cars.

### SIZE OF EQUIPMENT DEPENDENT ON CONDITIONS

Certain considerations, however, limit the size of equipment that can be used in any particular mine. With railroad equipment the size is not so definitely fixed, but in mining, as most of the haulage roads are underground, and as many of them were laid out years ago, when the equipment was small, the limitations to the size of cars are sometimes unavoidable.

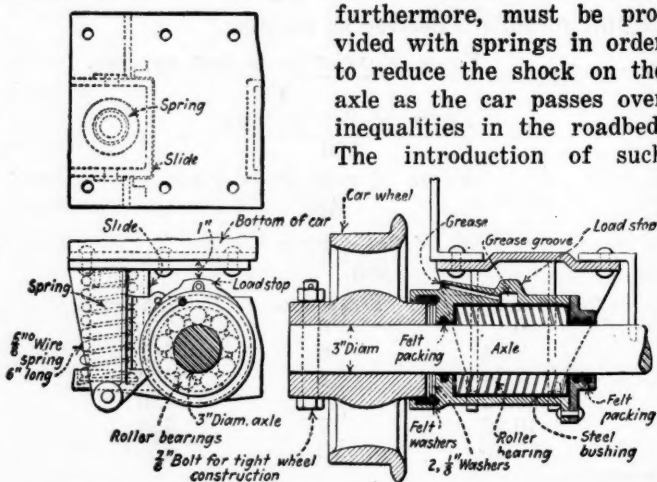
Many, if not most, mine roads have been driven within the coal bed itself, the height of the bed thus dictating the height of the car. It is, of course, not possible to use a car that is the full height of the bed unless the bottom is to be lifted or the top brushed.

Consequently a car must be so designed that room for the miner to load it with ease is readily available. It is well to make this space between the top of the car and the roof as large as is conveniently possible.

In addition to the height of the car, its length and width also are limited. The length and wheelbase are fixed by the degree of curvature of the tracks that must be traversed. The width is limited by the width of the heading and the requirements of the state mining laws. As a result, any device or arrangement of car that will permit a greater carrying capacity in a given size of coal bed is of more than passing interest to the whole mining profession.

The Chicago, Wilmington & Franklin Coal Co., of Illinois, recently desired to use, in one of its mines, larger mine cars than any hitherto designed. It accordingly requested Allen & Garcia, of Chicago, to prepare plans for a new mine car that would have a capacity of 8 tons of coal, and about 10 to 12 tons of rock. The great weight of the material to be carried necessitated a specially designed truck. This truck,

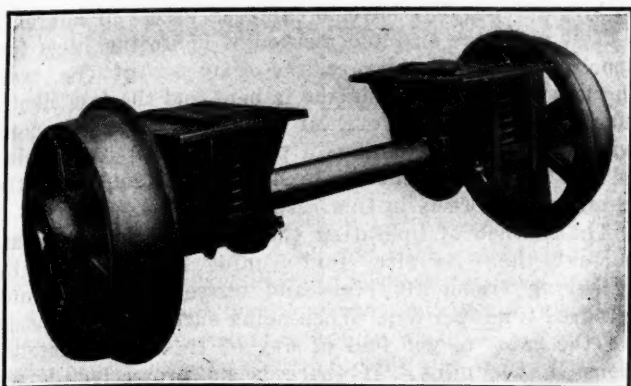
furthermore, must be provided with springs in order to reduce the shock on the axle as the car passes over inequalities in the roadbed. The introduction of such



WHEEL, ROLLER BEARING AND SPRING FOR NEW CAR

Despite weight of the car and its contents the diameters of the wheels are only 14 and 16 in. as so far constructed. The roller bearings measure 3 x 7 in.





SPRING BOXES AND WHEELS FOR EIGHT-TON CAR

Diameters of axles of wheels have been kept down to 3 in. by using steel of 30 to 40 points of carbon, heat-treated to a hardness of 240 to 250 Brinell. Springs are 6 in. long and made of 8-in. round steel.

springs, however, must not increase the height of the car when it is loaded. To meet the conditions imposed, J. R. Fleming & Sons Co., Inc., of Scranton, Pa., have designed a special truck.

This is being tested out at the coal company's mine. It is designed to carry a load on each axle of 4 tons in addition to the weight of the car itself. The axles are 3 in. in diameter and the journals are 3x7-in. Hyatt roller bearings. The spring pedestal is so arranged as not to increase the height of the car. Two springs are employed at each journal box, one on either side of the axle. When the car contains its maximum load, the springs will be so compressed that the load will just miss the stop on the top of the bearing.

#### AXLES ARE MADE OF HEAT-TREATED STEEL

Wheels of 14 to 16 in. in diameter are employed. It being advantageous to use as small an axle as possible on these cars, the diameter of the axle has been made only 3 in. The steel is of 30 to 40 points of carbon, heat-treated to a hardness of 240 to 250 Brinell. Heat treating in this manner raises the tensile strength to from 135,000 to 140,000 lb. per square inch.

Aside from the special arrangement of the truck and bearings, these journals are similar to the regular Fleming-Hyatt self-aligning roller-bearing journal boxes. Use of these bearings eliminates all bending and cutting of the axle.

With the use of springs the load can be handled with greater ease. Shocks to a certain extent will be removed from the drawbars or drawheads, and these will not be pulled out as frequently as sometimes happens around the mines or on railroad equipment. The road-bed also will be relieved of shock, and a decrease in low joints and bent rails should result. The springs in like manner relieve the axle and wheels from shock, and, consequently, there should be fewer bent axles and broken wheels.

These advantages will permit higher hauling speeds, while the cars will take curves easier and derailments will be fewer. This should reduce appreciably the frequency of wrecks on the haulage road, thus saving much valuable time as well as permitting a freer movement of traffic. Higher speed, larger car capacity and a decreased liability to wrecking will mean greater mine output with less rolling stock.

Much interest attaches to the actual use of spring journal boxes of this kind in the mines. If they are successful, it is probable that similar equipment will be employed in the future, and much of the present

rolling stock may be subject to overhauling. In installing such equipment the mines are merely taking a step that the railroads found it advisable to take many years ago.

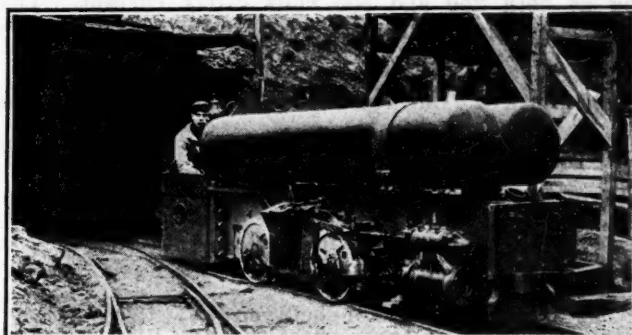
## France Makes Much Use of Compressed-Air Locomotives in Coal Mines

BY FRANCIS P. MANN

Paris, France

**F**RENCH regulations forbid the use of electric or gasoline locomotives in all mines or underground work where firedamp would cause explosions, so that compressed-air locomotives have been much used in France. For other reasons also they are often preferred for certain classes of work. For instance, the Paris subway, which is always under extension, is now making use of an up-to-date locomotive of the Renault type. The latter has been designed in general for all classes of tunnel or mining work, and runs upon a 24-in. track. It is made in three principal parts, vehicle frame, air tanks and back cab, and these can be dismounted so as to be let down separately into a mine. The engine is of a new type which is claimed to be quite an improvement over those which have preceded it.

A high-pressure cylinder is disposed on one side of the vehicle and a low-pressure cylinder on the other side, the wheels being driven as shown in the illustration. Above the cylinder is the slide valve, which in



COMPRESSED-AIR LOCOMOTIVE WITH HIGH- AND LOW-PRESSURE CYLINDERS

This locomotive runs on a 2-ft. track. The air is heated before it is used and is heated again before being admitted to the low-pressure cylinder.

this type is cylindrical. Air from the tanks first goes through the pressure reducer and then through a heater, and reaches the high-pressure cylinder. The exhaust from this cylinder is sent into another heater and then into the low-pressure cylinder. Two air tanks are shown on this locomotive, but if desired a third can be added on the top. The total length over the buffers is 12 ft. 4 in. and the width is 4 ft. 2 in.

**I**N LARGE-SCALE BLASTING in coal mines it is customary to fire many shots simultaneously. The electric detonators usually are connected in series and are fired either from a power circuit or from a blasting machine with large capacity, operated by hand. When firing with a blasting machine, trouble with missed shots has been frequently experienced. Under these circumstances the shots that fail to fire often are a group in the center of the series. Various explanations have been given as to the cause of the failures. Details of tests made by the electrical section of the U. S. Bureau of Mines which may be helpful in understanding the probable cause of the misfiring of center shots are given in Serial 2384, just issued.

## How to Make Portable Electric Cable Last\*

BY H. M. MCFARLAND†  
Boston, Mass.

THE attainment of long life and consequent low cost per ton for portable electrical cables used on underground mining machinery can be greatly aided by attention to five vital factors, which are as follows: (1) Use of conductors of proper size; (2) proper working voltage; (3) proper use of operating reels of correct size for the spooling of cables; (4) proper stranding of the copper conductor; (5) care in the handling of cables.

Let us consider first why it is important that all conductors should be of proper size. Practically all portable underground cables have Para rubber of varying percentages of vulcanization next to the copper. This rubber starts to deteriorate when the vulcanizing temperature is reached. For this reason the temperature of the copper must be kept at less than 220 deg. F. This cannot be done unless the conductor is of the proper size.

From actual tests made by the manufacturers of all-rubber cables having a high percentage of Para rubber the operating temperature of such cables is less by about 25 per cent than the same size of braided cable carrying the same currents. This is because of the greater heat conductivity of the high-grade rubber. Table I shows the size of conductors recommended for various mine locomotives and mining machines operating at both 250 and 550 volts direct current. The recommendation is based on the maximum allowable copper temperature.

TABLE I—SIZE OF CABLE FOR LOCOMOTIVES AND COAL CUTTERS

Equipment	250 Volts Size of Cable	500 Volts Size of Cable
Locomotives		
6-Ton.....	No. 2	No. 4
5-Ton.....	No. 3	No. 6
4-Ton.....	No. 4	No. 6
Mining machines		
50-Hp.....	No. 2	No. 4
35-Hp.....	No. 3	No. 6
30-Hp.....	No. 4	No. 6

The difference in cost between any two sizes of cables is only 8 to 12 per cent and the larger size of cable has 25 per cent more copper than the next smaller size and will outlast it from 30 to 50 per cent, so that an actual saving in dollars and cents is made by using the proper size. This is particularly true on the all-rubber cable, as the rubber is hard to cut while cool, but cuts more readily when the temperature rises.

As to the proper working voltage, attention may be called to the fact that the work done by any direct-current electric motor is the product of volts and amperes. When the voltage goes down the amperage goes up—not in exactly the same ratio but depending on the way in which the motors on the various kinds of equipment are wound. This tendency to draw increased current from the line on low voltage is greater on series-wound motors, as the entire current is carried around the field of the motor. Practically all mine locomotives have motors of this kind and over 50 per cent of the winding on the compound-wound motors of the mining machines in general is in series. Therefore the cables may be expected to heat up when, owing

to low voltage, they have to carry an excess of current.

Now as to the size and method of operating reels for spooling cable, the larger the diameter of the reel, the less the copper conductor is bent and the less likelihood there is, therefore, of breaking the component wires. Of course, there is a practical limit to the size of reel to be used, but the manufacturers could greatly improve their reels in this respect.

The method of operating the reel is even more important than its size, for a mine locomotive while gathering frequently reels and unreels its cable one hundred times per day. When doing such work it is easy for the cable to get foul of any of the many obstructions in the mine. If there is no protective device on the reel to slip and protect the cable from excessive tension when it thus becomes entangled, the copper wires are likely to be stretched and reduced in diameter, thereby decreasing their conductivity, if not actually breaking some of them. Soft-drawn copper will stretch about one-quarter of its length before it will part.

As to the correct stranding of copper conductors, nearly all manufacturers regard the seven-strand cable as standard. Now the number of wires in each strand should be sufficient to give the cable enough flexibility for the service intended. As locomotives reel and unreel their cable three to four times as often as mining machines the cable used on mine locomotives must necessarily be much more flexible if it is to have long life. The standard practice now with reliable manufacturers is to put at least 19 wires to each strand for locomotive cables, giving a 7x19 cable or 133 wires all told, and on the mining machines a 7x7 or 49-wire cable is found to give good results. A 49-wire cable will not have as long a life on a locomotive as would a 133-wire cable, yet the difference in cost is only 5 per cent.

### LIFE OF CABLE DEPENDS ON CAREFUL HANDLING

Another important factor in the life of cable is the manner in which it is handled. This is a problem for each individual operator and in the main depends on the experience of the motorman or machine runner who handles the cable. Green men invariably abuse the equipment they handle, but with proper supervision they can be made to take care of their cables; some really remarkable records in fact have come to my notice.

For your information and also a mark to shoot at I will give you herewith a record of an all-rubber-covered cable in use at No. 2 mine of the Clinchfield Coal Corporation at Dante, Va. Mr. Booker, chief electrician of this company advises that he put a No. 3 all-rubber cable on a 5-ton locomotive Sept. 8, 1921. This locomotive gathered coal in the daytime and handled a mining machine at night. The current for this machine was fed through the same locomotive cable, giving a day-and-night service.

Up to Sept. 15, or in a little over one year, this locomotive has hauled 42,300 tons of coal and the machine has cut 47,000 tons of coal, giving a total hauled and cut of 89,300 tons of coal. The first cost of the cable was \$70 and 7 splices in that time will add \$3.50, or a total cable cost of \$73.50.

Dividing this sum by 89,300 tons gives a cost per ton of \$0.0008 or  $\frac{1}{1250}$  of one mill. This is about  $\frac{1}{4}$  of 3 mills, which was the cost per ton of braided cables given by C. E. Rogers in the excellent paper<sup>1</sup> of his committee on gathering locomotives.

\*Part of a discussion of a report of the Committee on "All-Rubber-Insulated as Compared with Ordinary Braid-Covered Cables for Portable Extensions, Locomotive Cable and Mining-Machine Cable" appointed by the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers. This report may be found in this issue of *Coal Age*.

†Simplex Wire & Cable Co.

<sup>1</sup>*Coal Age*, Sept. 14, 1922, page 403.



## Rubber-Covered Vs. Braided Cable for Mine Work\*

**Beware of Short Cotton Fiber in Braid—Kink Test—Though Rubber Covered Cable Lasts 75 to 100 Per Cent Longer, Mines Getting Ten Months' Service Out of Braided Cable Should Not Abandon It**

ONLY such cables will be considered in this article as are used for connecting conductor-cable-reel gathering locomotives, coal-cutting machines, loading machines, portable lamp cords and other mining equipment to trolley wires. Until recently rubber-covered cotton-braided cable was in general use. Approximately two years ago all-rubber-insulated cable made its appearance, and for mining service it quite largely has replaced cotton-braided cable.

For a long time the question as to the kind of cable to be employed usually was left to the discretion of the salesman. The order called merely for No. 3 or No. 4 locomotive or mining-machine cable, as the case might be, and the conductor thus loosely specified often gave unsatisfactory service. In some cases the cable lasted only two or three months and sometimes an even shorter period, whereas the average life should be from six to eight months.

All cables of the braided type have a rubber insulation and a woven covering of cotton, either single, double or triple braided. This braiding is saturated with an insulating compound, the purpose of which is to keep water out of the cotton, thus preventing the fiber from loosening or rotting. It also gives to the cable a certain degree of slickness which helps it to resist abrasion. The chairman of this committee has made extensive tests on different forms of this type of cable and has found that some manufacturers use an inferior grade of cotton in their braid. The fibers are short and hard, and the life of cable of this kind is, of course, not as long as it should be.

### BEWARE OF CABLE COMPOUNDS THAT PEEL OFF

The braid in some cable is not fully saturated with compound. Other cables show a beautiful glossy surface, giving the appearance of having plenty of impregnating materials, but the compound will chip off when the cable is bent. Consequently the braid becomes bare and presents a dull and ragged appearance. When this type of cable is used on gathering motors or mining machines the cotton braiding soon breaks and unravels and much tape is necessary to keep the conductor in service until at last so many splices have been used that renewal becomes necessary.

The chairman of this committee has had manufacturers submit samples of different makes of cables to which he has applied various tests in order to ascertain the strength of the cotton braid and rubber insulation. Among others he has used a "kink" test, in which the cable is bent into a short loop and then pulled out straight again.

None of the cables with ordinary woven braid would resist this test, as the insulation would tear under the stress. Most of the cables where the covering was of cord construction would come through the test in

good condition. Some of the manufacturers are insulating their cables with heavier rubber than is found on ordinary braided cable, and when they do so the cable gives better service than any of the other cotton-covered cables.

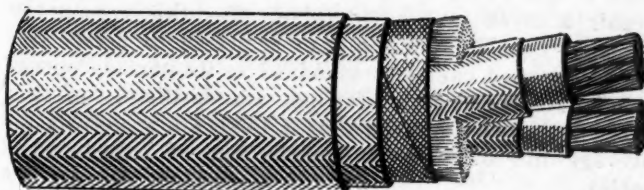
In making a choice between all-rubber-covered cable and braided cable, attention should be paid to the fact that all-rubber-covered cable costs from 75 to 150 per cent more than cotton-braided cables with the braiding of either weave or cord construction. Therefore, a cable with all-rubber insulation should have at least twice the life of ordinary braided cable.

For any mine which is getting from 8 to 10 months of service out of ordinary cotton-covered cables a change to all-rubber-covered cable is not advisable. The life of a cable as used on gathering reels on mine locomotives or loading machines, etc., usually ends when an excessive number of splices has been made, and it has been observed that a cable which with very careful handling would have only three splices after 8 months in service, would require, after that time with the same careful handling, to be spliced not less than once a week. After 10 months' service it would need splicing so frequently that to avoid loss of time it would be advisable to install new cable.

### NUMBER OF REELINGS DETERMINES LIFE

It is apparent, therefore, that the life of the insulation and of the copper itself is limited by the number of times the cable has been reeled, especially if it is subjected to long hauls and is bent around sharp corners. Another factor which enters into the life of the cable is the voltage which is maintained at the entries on which the equipment is working. If the voltage is not kept within a reasonable range of the normal rating of the machine the cables are subjected to heavy currents and consequently to heating. This is likely to make the copper brittle. Furthermore, if the cable gets too hot so that the insulation warms up, the rubber separates from the copper strands, and on braided cable the insulating compound also melts out.

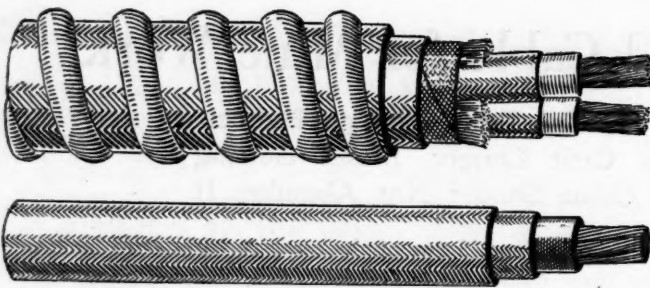
The life of cables subject to such treatment is very short, but under such conditions life proportional to value cannot be obtained from either type of cable. Another factor entering into the life of such conductors, especially on gathering locomotives, is the type of reel in use. At this point I would call the attention of manufacturers of gathering locomotives to the fact that



**BRAIDED CABLE WITH TWO STRANDED CONDUCTORS**

This cable has each conductor separately covered with rubber and braid, the two conductors with their covering being entwined. Jute fillers give the whole a circular cross-section. The cable thus rendered round is covered with tape and one or more saturated braids.

\*Report of Committee on "All-Rubber-Insulated as Compared with Ordinary Braid-Covered Cables for Portable Extensions, Locomotive Cable and Mining-Machine Cable," presented at the Huntington meeting of the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers, Sept. 21. Committee consists of F. M. Reigher (chairman), H. B. Pickrell and E. S. Stickel.



TOP CABLE FOR COAL CUTTER, LOWER FOR LOCOMOTIVE  
The upper cable is quite similar to that in the opposing column but around it has been laid a spiral winding of D-shaped steel tape. The lower is a gathering locomotive cable with a single flexible tinned conductor insulated with rubber and one or more tough coverings of weatherproofed cotton, weatherproofed jute, hemp or seine-twine braid.

while they have made wonderful progress in the development of the reel type of gathering locomotives, the development of the reel itself has not kept step, and the cable reel is a subject which should have further consideration from the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers.

On some locomotives the spooling device will not accommodate No. 2 cables even when properly spooled, and in consequence toward the end of the spooling the cable is wedged and crossed on the reel. This injures the insulation and the stranding of the cables just as it injures the strands of a hoist rope when it is not wound properly or evenly.

The manner in which the cable is handled by the motorman when gathering has much to do with the length of its life, as the men often get too much slack and then run over the cable and jerk or whip it. This is done when the men are either not familiar with the type of reel in use or are not cautioned as to the proper operation of the reels. It also occurs on some types of reels if the clutch has not been set at the proper tension.

The main fault in the types of all-rubber-covered cable now in general use is that the insulation stands up too well. After the cable has been run over or kinked severely the copper strands will part when subjected to strain, yet the rubber insulation will show almost no sign of injury. To find such a place in a 500-ft. cable will consume from one to three hours of a man's time. If he found it in less time he would be fortunate indeed!

When each gathering locomotive is required to haul a certain quota of cars every day, the motorman cannot reach this quota if he is delayed by an ineffectual search for breaks in his cable. The men at the Stonega plant for this reason took such a dislike to all-rubber-covered cable that at one time a brand new one was found all chopped to pieces. For this reason the claim that all-rubber-covered cable reduces frequent and expensive interruptions cannot be substantiated. It will seldom take a motorman more than 10 minutes to find and repair a break in braided cable. For this reason the Stonega Coal & Coke Co. has hesitated to accept all-rubber-covered cables as standard in its various operations. Another reason for not standardizing on this cable is that the Stonega Coal & Coke Co. is getting an average life of 6 to 10 months out of cord-braided cables.

At the last convention and industrial mining exposition the chairman of this committee told some of the representatives of the cable manufacturers that cable of No. 3 conductivity and cost was wanted with the tensile strength a No. 2 and cable of No. 4 conductivity

and cost with the tensile strength of No. 3. To obtain this I recommended the use of a steel or similar reinforcement of high tensile strength.

Some of the manufacturers of all-rubber-covered cable are following this suggestion and have brought out during the last two months different types of reinforced locomotive cable. At the present time a cable of this type has been in service approximately two months and the results obtained are quite satisfactory. The Stonega Coal & Coke Co. will receive in the near future cables of various kinds all thus reinforced and will continue its experiments on this type of cable.

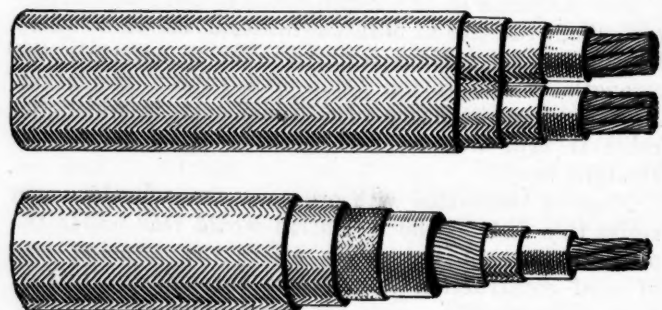
For extension cords around mines and mine shops all-rubber-covered cable should be used. The wire should be of not less than No. 14 gage, for the majority of electricians break or injure the fine strands when skinning the wires and thus reduce the carrying capacity of the cable and its ability to withstand the pulls and strains to which extension cords are subjected.

The committee would suggest to the manufacturers rubber-insulated cable from No. 4 to No. 1 gage should have 133 wires. For ordinary braided cable up to No. 3 size the limit should be set at 49 wires, as the danger of puncturing the rubber insulation with the finer sizes of stranding would be too great. For the larger sizes No. 2 and No. 1, 133-wire cable is necessary to insure flexibility. On the cables where the braiding is of cord, the strands for No. 3 can contain either 133 or 49 wires. Not more than 49 wires should be used, however, in No. 4 cable.

The committee would suggest to the manufacturers of all-rubber-covered cable that they reduce the cost of their cables so that they will come closer in line with the cotton-braided cables, as it believes that in many cases the additional service obtained from the all-rubber-covered cable over the braided cable does not warrant from the 75 to 150 per cent higher cost.

It believes that all-rubber-covered cable is a step forward to a better insulated and more serviceable cable and would like to see wires and cables of this and similar construction manufactured for installation work, as it believes that it will give excellent service in conduit, where the cable is subjected to much vibration, as in tipples and breakers. It also thinks that fire hazards will be greatly reduced by the use of this type of cable, as rubber is not as easily ignited as a cotton weave saturated with compound which is at present used to insulate wires and cables for installation work.

Though this paper does not mention the multiple-conductor mining-machine cables, attention is called to the fact that all that has been said in regard to the insulating and wearing properties of the cable as used



TWIN MINING-MACHINE AND CONCENTRIC  
DUPLEX CABLE

The twin cable is flat and made up of two stranded tinned conductors each insulated with rubber and one weatherproof braid. These are laid up parallel. Over them are wound two or three weatherproof braids.



by gathering locomotives applies also to this cable. There remains the question whether to use concentric or twin cables, but the opinion of all who use cable for this purpose is so greatly divided that no conclusive arguments can be brought forward to decide the question, because, after all has been said, each one uses the type of cable, concentric or twin, that meets his own peculiar conditions best.

### Engineers Detail Experience with Machine Cable, Resistors and Insulating Oils\*

AT THE third session of the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers, on Thursday, Sept. 21, F. M. Reigher, of the American Coal Co. of Alleghany County, Bluefield, W. Va., made the report for the committee on cables. Mr. Reigher proved a firm advocate of braid-covered cables, not so much on the ground that they were better than rubber-covered cables, which he did not claim, but because the latter were more expensive and would have to be cheaper to receive his indorsement. He asserted that the wires inside a rubber-covered cable were likely to break, and when they did it was sometimes extremely difficult to ascertain just where the defect occurred.

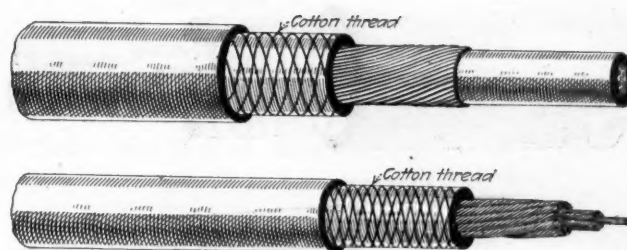
Reuben Lee, of the Elkhorn Piney Coal Mining Co., Stanaford, W. Va., said that cars could be run over rubber-covered cable without any trouble of the kind described. He himself would use nothing else. His company had used that type of cable for seven or eight years. N. A. Johnson, of the Buffalo-Eagle Coal Co., Braeholm, W. Va., declared that he had no trouble with concealed broken wires. At his mine he had never been able to get, like Mr. Reigher, seven or eight months of service out of braid-covered cable. He preferred an all-rubber coating. He found difficulty in holding enough cable of adequate size on certain types of reels.

C. E. Rogers was afraid that the rubber of rubber-covered cable would deteriorate before he would get sufficient life out of it to justify its greater expense. He found that foremen and superintendents were quite willing to pay the greater cost if thereby they could get better service out of the cable, certainty in operation being in their belief more important than ultimate length of life. Mr. Johnson said that the saving in splicing reduced delay and justified the higher cost.

#### DETERIORATION VS. WEAR FACTOR IN CABLE LIFE

Mr. Reigher stated that in estimating the life of a cable consideration should be given not merely to days of life but to the number of reelings and unreelings during that period. Some men reeled out the cable twice as many times a day as other men, thus inevitably shortening the life by increasing the daily service. A. Fred Phelps, of the Post Glover Electric Co., said that rubber-covered cable would last two or three times as long as cable covered with braid, but nevertheless it might not last ten months where the conditions of service were peculiarly trying.

Mr. Reigher urged that 133-wire cable was made up of excessively small wires and said that such wires punctured the covering. He believed that rubber-covered cables with steel reinforcement in the rubber could be guaranteed for twelve months. He could not see that rubber-covered cable could be expected to last long



TWO TYPES OF ALL-RUBBER INSULATED CABLES

The top cable is a concentric duplex cable with rubber between the two conductors. Around the outer conductor is a covering of rubber, on which two cotton strands are wound in opposite directions. This is covered again with a coating of rubber. In the lower illustration is a single conductor with a covering similar to that of the outer conductor in the duplex cable above.

enough to make the investment profitable. Mr. Phelps said that no guarantee of the life of a cable should ever be given because a "short" might at any time overheat the wires and insulation. Furthermore at some places cables would last eighteen months and at others not more than thirty days.

H. M. McFarland, of the Simplex Wire & Cable Co., said that much depended on how the strands were disposed. He found seven and nineteen strands better than nineteen and seven. Mr. Reigher remarked that he was opposed to the use of such fine stranding for a No. 4 cable, whatever might be used in those that were larger. Mr. Phelps amplified his previous statement by saying that the compensation rules in Pennsylvania made favorable insurance provisions wherever fuses were provided in the cable. One objected, however, that fuses were useless, as machine men would take ample care that the fuse was provided with a conductor that would not fuse at any lower current than that which would melt the wire in the cable. For this reason fuses would be little or no protection.

#### CABLE LARGER THAN NO. 4 TO HAVE 133 WIRES

E. S. Simkins, of the Standard Underground Cable Co., declared that the whole matter had been discussed at a hearing held by the Bureau of Mines and it had been decided that 133-wire cable should be used for the larger cables but that No. 4 and smaller should have only 49 wires.

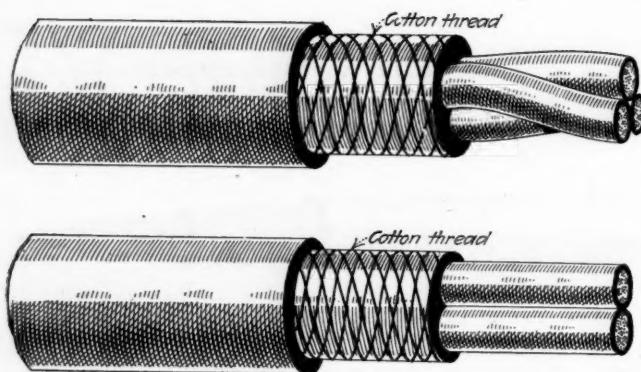
Mr. Lee said that the grades at Stanaford were so heavy that the cables heated and the rubber came off on the braid-covered cable. Someone remarked that the insulation in braided cable varied greatly and some specification should be made as to the amount of rubber used. Mr. Simkins said that every kind of insulation was used by unscrupulous manufacturers. Some of it, he jokingly asserted, was a mixture of Jersey mud and molasses.

He said that when reeled in three layers cables had only about one-half their unreeled capacity. The mine locomotive builders admitted that their reels were too small for an adequate size and length of cable, but with that admission they rested. They had done nothing to increase the size of their reels.

Roscoe Woltz, for the committee on the use on mine locomotives of resistance grids made of rolled-steel plate as compared with cast grids, made a report on that subject, as published in the issue of *Coal Age* of Sept. 14. Mr. Reigher declared himself a believer in the steel grid. Nevertheless he said he had cast grids in use that had lasted six years.

Mr. Phelps said that the steel grids would occupy no more space than cast grids and that standard grids

\*Conclusion of report of meeting at Huntington of the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers. See also issues of Sept. 28 and Oct. 5.



FOR ALTERNATING AND DIRECT CURRENT  
RESPECTIVELY

These also are all-rubber-insulated cables, the cotton thread forming but a small part of the covering. In the upper cable are three conductors for the three phases and in the lower two conductors, one for the ingoing and the other for the return current.

could be so assembled as to fit whether the space was narrow or wide. The grids for the first point were assembled with spaces of  $\frac{1}{2}$  in. On the last point the spacing was increased to from  $\frac{1}{2}$  to  $\frac{3}{4}$  in. apart. It was always a surprise to him how little experimental knowledge there was about the design of grids. His company was experimenting, but there was still much more to be learned.

He said that the 4 per cent silicon-steel grids rusted on the surface, but the rust formed a protective coating, preventing any further deterioration. George Suiter, of the Winding Gulf Coal Co., a member of the committee, volunteered an indorsement of Mr. Phelps' statement that a steel grid was just as readily repaired as one of cast resistors. He had eighteen out of thirty mine locomotives and several mining machines fitted with steel grids and he had no difficulty in repairing them.

In the enforced absence of W. C. Shunk, general superintendent of the Stonega Coal & Coke Co., R. Dawson Hall read Mr. Shunk's paper on "How Mechanical and Electrical Men Can Increase Their Usefulness and Therefore Become More Important Figures in the Organization." In discussing the paper J. H. Edwards, the president, electrical engineer for the Elkhorn Piney Coal Mining Co. and other companies, declared that electrical engineers need more system so that they can the more readily tabulate experience and costs. He declared that a little clerical experience was an asset to any electrical engineer. A. B. Hokcomb, of the Corliss Carbon Co., remarked that it had been stated at a meeting of steel engineers that with maintenance cost sheets it was often possible to show that a machine that was giving excellent service might profitably be scrapped with a saving in upkeep expense sufficient to pay for the new machine in two or three years to the company which thus dispensed with it.

On Friday, Sept. 22, a paper was read by M. W. Crenshaw, of the wireless department of the Banks Supply Co., of Huntington, W. Va., on "The Wireless Telephone." A. F. Brosky made some brief remarks about the experiments carried on by the United States Bureau of Mines and the Westinghouse Manufacturing Co. in a mine near Pittsburgh. It was found that the rock intercepts the waves at depths exceeding 50 ft. and that the receiving instruments that gave the best results on surface work were not so successful underground as others that were regarded under ordinary conditions as being less desirable.

R. R. Webster, chairman of the committee on the "Proper Handling and Care of Insulating Oils," read the report on that subject. This report appeared in *Coal Age* in the issue of Sept. 28. The chairman said that the subject was one of considerable importance, as many transformers had been in use now for quite a few years and the oil had not been changed or filtered. He also read the following statement:

"The following are tests on the oil of three General Electric 65-kva. 2,300/206-volt single-phase transformers, used inside a mine substation to supply a synchronous converter. The two tests are about two years apart, the oil not being filtered or renewed in the meantime. The day load on these transformers has been averaging approximately 60 per cent of full load. However, the short-time peak loads often exceed 175 per cent of full load. A temperature test taken during the summer, when these transformers were reported to be running warm, showed the oil to be 114 deg. F. Note that the decrease in the dielectric strength of the oil during the two years is considerable:

Transformer	Test Sept. 25, 1920		Test Aug. 28, 1922		Dielectric Strength In Percentage
	Oil From Bottom	Oil From Top	All Oil Samples No. 1	From Top Sample 2	
Serial Number 1,573,264	14,250	18,000	13,000	13,500	73.5
1,573,280	19,000	23,000	16,000	12,000	61
1,573,263	.....	10,500	10,500	.....	100

NOTE: The laboratory which made the test of Aug. 28, 1922, reported no sludge in oil, described the color as "lemon" and recommended "filtering for moisture."

"The following is quoted from an article by J. L. R. Hayden and W. N. Eddy which appeared in the July, 1922, issue of the *Journal of the American Institute of Electrical Engineers*. It is a tabulation of the average per cent error that might be expected for (1) a single test, (2) three tests, or (3) six tests on oil if the mean of 500 successive breakdowns is taken as the correct dielectric strength and any variation from that as the error.

	Long Sphere		Short Sphere		Needle Sphere	
	Air Gap In Oil Per Cent	Per Cent	Gap In Oil Per Cent	Per Cent	Gap In Oil Per Cent	Per Cent
Single breakdown test						
Average error.....	1.1	7.8	7.8	8.4	8.4	8.4
Maximum error.....	6.7	48.5	34.1	44.8	44.8	44.8
Maximum error except 3 readings.....	4.0	33.0	31.8	35.0	35.0	35.0
Three breakdown tests						
Average error.....	0.8	5.2	4.9	4.9	4.9	4.9
Maximum error.....	4.0	22.4	19.7	19.1	19.1	19.1
Six breakdown tests						
Average error.....	0.6	2.7	3.5	4.1	4.1	4.1
Maximum error.....	2.9	17.5	15.0	14.3	14.3	14.3

Mr. Crenshaw wanted to know how the "sweating" properties of a steel transformer differed from those of one made of cast iron. He was told that a transformer case if properly prepared by drying for the reception of the oil would not permit of an accumulation of sweat, providing the oil itself was free from moisture.

It being learned that the Coal and Industrial Exposition would not be held in Huntington next year, the association concluded not to set any place for the next meeting until it was ascertained where the exposition would be held.

THE U. S. BUREAU OF MINES does not make life tests of batteries used on electric lamps, but the performance of the batteries is studied during a short period while the lamp bulbs are being tested for life and uniformity. Also, field inspections are made by the bureau's electrical engineer, and reports are obtained from both users and lamp manufacturers. As a result of this general information the bureau believes that lead cells will give 300 shifts of 12 hours each, and alkaline cells 600 such shifts, without plate renewals.



## Ventilation of Mines with Flexible Conduits

Brattice Cloth, Sollars, Windboxes, Metal and Flexible Pipe as Means of Ventilating Blind Entries—Method of Suspending and Coupling Pipe and Erecting Ventilating Machinery

**E**VERY coal mine requires some sort of ventilation. As a rule the circulation of air through the various headings and rooms of ordinary workings is not difficult, as every mine is, or should be, laid out with this end in view. When it becomes necessary, however, to ventilate long stretches of single heading or various other dead-end operations a more serious problem is introduced.

Common means of carrying air to dead-end faces include the brattice, the sollar, the windbox, and various kinds of pipe, either rigid or flexible. The brattice is well known to all coal miners. It consists of a partition built up of boards or canvas, or both, extending throughout the length of the place to be ventilated, dividing it longitudinally into two sections or compartments. In one of these the air travels inward and in the other outward.

A large volume of air may be handled by the brattice. It is nevertheless subject to many shortcomings. In the first place it is always liable to more or less leakage. The brattice itself as well as the joints at floor and roof seldom can be made tight. If carried to a point near the face it is subject to injury from shooting. This is particularly true if the passage to be ventilated is in rock which must be blasted from the solid, this of course necessitating heavy loading. It also reduces the width of the roadway unless the place driven is specially widened for that purpose.

### DIVIDING THE AIRWAY BY HORIZONTAL BRATTICE

Sollaring air to the face as a rule is more expensive and less satisfactory than bratticing. Whereas the brattice divides the heading or driven passage vertically the sollar divides it horizontally. Thus a bratticed heading contains two compartments side by side, while the sollared heading has two passages one above the other. The sollar has all the shortcomings of the brattice so far as leakage is concerned with the added disadvantage that it is applicable ordinarily only where timber framing such as post sets are used.

The windbox is a modification of the sollar. Here air is carried into a working by means of a wooden box laid, usually, on the floor at the side of the driven passage. Such a box, even though effective, is difficult to make airtight and requires much lumber, as a rule being made of tongued-and-grooved flooring. It also adds appreciably to the fire hazard and is not an efficient means of carrying air, as the frictional resistance is considerable.

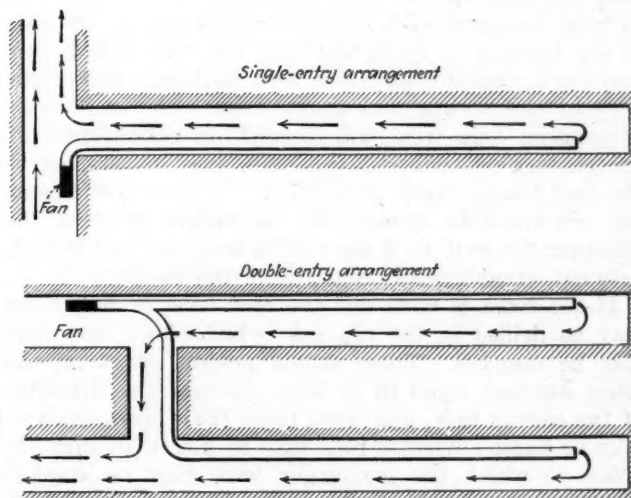
Sheet-iron pipe often is used to convey air to the remote faces of headings and rooms. This may be either black or galvanized and usually ranges from 8 to 24 in. in diameter. Though fairly tight and losing much less air from leakage than any of the devices previously mentioned, it is somewhat difficult to handle, as it cannot be collapsed in any way. The maximum length that can be transported conveniently is about 10 ft., so that many joints have to be made in its erection. In addition to all this the sheets from which such pipe is made are thin and subject to rapid corrosion. Gal-

vanizing will protect them from water but not from acid, which many, if not most, mine waters carry in solution. Consequently such pipes, though affording excellent results for a time, are as a rule short-lived. Another disadvantage of such pipe is that it becomes dented, causing a loss in carrying capacity, and if this occurs near the joints the leakage is considerable.

During recent years another form of piping that possesses many advantages over the devices previously mentioned has come into more or less extensive use. This is a tube of canvas or fabric that is marketed under various trade names. Such tubing is manufactured by at least three makers—two in this country and one in England. Thus the Bemis Bro. Bag Co., of St. Louis, Mo., manufactures a canvas tube known as Flexoid; E. I. du Pont de Nemours & Co., Inc., of Wilmington, Del., makes a fabric tube similar in many respects to the product just mentioned but known as Ventube, and the Telephos Co., Ltd., of Vaughan Road, West Harrow, Middlesex, England, manufactures a canvas pipe known as Ventwal.

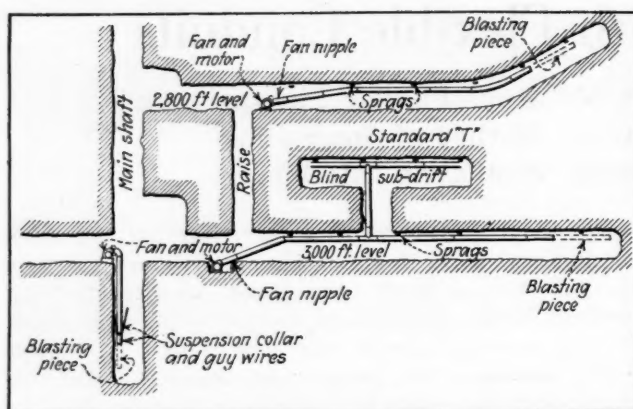
All the tubes manufactured by the above firms are circular or elliptical in cross-section. An Australian device of similar nature is made with a rectangular section. Inasmuch, however, as this shape does not lend itself readily to manufacture at low cost and as a conduit of this section must be supported by a framework of light wood or metal this device has not met with extensive application. The circular forms also oppose less resistance to the air current.

In ventilation by means of flexible conduit the joint between sections has always presented difficulties. In the Flexoid and Ventube pipes this has been overcome by fastening a light spring-steel slightly collapsible ring at either end of each section of tubing. In joining two sections together one of the end rings is slightly



METHOD OF USING FLEXIBLE PIPES IN SINGLE AND DOUBLE ENTRY

With these arrangements liberal ventilation can be afforded the faces of entries, thus driving out gas and smoke. In the time wasted in waiting for the clearing away of the bad air from a single shot a line of flexible conduit could be hung from the cross-cut to the face, making bad air thereafter entirely unnecessary.



#### DIFFICULT PROBLEMS IN VENTILATION IN STEEP BED

With tees, wyes and right angles, half right angles, offsets and reducers the air can be taken anywhere and lowered in volume to suit needs. Where there are chutes the conduit can be taken under them so as to be well out of the way. With a fan and motor directing current up a room, inclined breast or gangway and a pipe controlling the current, the ventilation of the working place is not left to the mercy of air which, temporarily baffled in the main airway, is beaten back into blind entry or seeks another road from that which is more direct but for the moment more greatly obstructed.

collapsed and pushed sideways through the ring on the other section. It is then turned so that it is parallel with its mating ring and the two section ends pulled from each other until the joint is made tight.

In the Ventwal tube a slightly oval steel ring is sewed into the end of each section or length of pipe. When in proper position the end of one tube may be readily inserted within the end of the other. Then turning one tube or section through an angle of 90 deg. and pulling the joint tight locks the two ends securely and makes a junction that is practically airtight.

#### HUNG TO ROOF WHERE CARS CANNOT INJURE IT

To uncouple any of the above joints the sequence of operations is merely reversed. In any case no tools are required, neither is any particular skill necessary. Any ordinary workman can soon learn to make or break joints with ease and precision.

One great advantage enjoyed by tubes of this kind is the ease with which they can be disposed within a mine passage whether this be driven in rock or coal. In most instances such tubing is suspended at the side of the heading or room and near the roof and in this position it does not interfere with haulage. Messenger wire is first strung and drawn taut. The method of suspending this wire will depend on conditions. If the passage is timbered this wire may be stapled to the roof beams every 12 to 15 ft. If such roof beams are not available, sprags may be wedged between the ribs near the roof or, if the roof is irregular and arched, between irregularities occurring in the roof.

If the room is wide and the roof level or flat, holes may be drilled in the rib, into which short iron rods may be inserted. These should project out from the rib a distance equal to at least one-half the diameter of the canvas tube, and upon them the messenger wire may be hung. Wooden rods may be placed in such rib holes, to which the messenger wire may be stapled. Cross-pieces may be nailed between posts, to which the wire may be attached, or short pieces of boards may be nailed to the posts, extending out to one side a sufficient distance to permit the tube to hang free. In any case, suspension of the messenger wire is comparatively easy. Another method is to set plugs in the

roof and hang the messenger wire from these. No. 8 B. & S. galvanized wire is recommended.

Attachment of the tubing to the messenger wire is made by means of hooks spaced at about 2½ ft. intervals. In shafts, winzes or raises suspension collars are placed on the tubing every 50 to 100 ft., depending upon its size and consequent weight. These are fastened by means of wires to the side walls or timbering so as to take all the weight of the tube section to which the suspension collar is attached. Excessive weight upon any joint or coupling is thus avoided.

The manufacturers of Ventube claim for their fabric a chemical stability that enables it to resist the acid and gaseous conditions encountered underground, as well as attack from fungous growths of various kinds. It is also waterproof and of great toughness and tensile strength, as proved by an eighteen months' test in mines where the conditions were unusually severe. The stitching of the tubes is made with specially treated thread.

#### TUBE CAN BE PATCHED LIKE A RUBBER TIRE

A special cement is used for patching, the part to be patched being deflated and the torn section to be covered being carefully cleaned with gasoline. Two coats of cement are placed on the pipe and on the patch and left to dry. When completely dry the cemented portions are hammered together on a flat surface, giving instant adhesion. For temporary repair underground a small patch can be sewed on, and this usually will give entire satisfaction.

"Fittings" for this kind of tubing are exactly analogous to those available for wrought-iron or steel pipe. They include elbows, tees, wyes, reducers and the like as well as a connection to join the tube to the rectangular discharge nozzle of a fan or blower. A blasting piece also is sometimes used next to the face if heavy charges are to be fired. This is drawn back before the shots are detonated, and pulled forward again after the blast, thus avoiding the injury to the fabric which frequent removal and dragging over the ground would inevitably cause should the end tube be unhooked every time before a shot was fired.

As a rule a fan or blower will be used to furnish the air current. Where compressed air is available, however, a small jet may be led within the outbye opening of the pipe and a ventilating current induced on the principle of the injector. Tests made in South Africa some years ago showed that 5 cu.ft. of free air per minute escaping under pressure from a ½-in. nozzle opening induced a current of 210 cu.ft. per minute; 80 cu.ft. of free air escaping under pressure from a ¼-in. opening actuated a current which delivered 1,080 cu.ft. of air. These experiments were conducted on a 538-ft. length of 9-in. pipe, and the figures on the resulting current just given were the discharges measured at the outlet opening and included, of course, the input of compressed air.

In most cases, however, as above stated, a fan or blower will be employed. This may be mounted either permanently or temporarily. For a permanent foundation no material, all things considered, appears to equal concrete. Brick or stone masonry may, however, be employed to advantage. In emergencies or in cases where the fan and tubing are to be used for only a short time a wooden foundation may be employed. This can be built up of mud sills and cross-pieces, bolted, drift-bolted or spiked together. Any timber that is



convenient, such as posts, ties, chock lumber and the like may be used, provided an even foundation surface is secured. Sawn lumber, of course, is preferable. If properly made a fan may be operated on a foundation of this kind for a long time.

In work of this nature the motor and fan, if possible, should be direct-connected. If this is done both elements may be bolted on a common base, which in turn is bolted to the foundation as a unit. For large volumes of air, however, belt or chain drives have their advantages, as the motor and fan may then be readily separated and moved into place with greater ease than if joined rigidly together. This arrangement, however, necessitates two foundations. Many companies manufacture fans suitable for this kind of work. Many motors also are available.

Although ventilation by this means will hardly be used in the ordinary operation of a well-regulated coal mine it may advantageously be resorted to for special work or in time of emergency. Thus it will find application in driving long passages, such as drifts or slopes from one bed to another, under streams and the like. The accompanying illustration shows some of the dead-end faces that can be ventilated by this means.

So far as coal mining is concerned it is in time of emergency that this type of ventilating equipment will be found most valuable. Its light weight—one man can carry 100 ft. of 16-in. tubing without serious inconvenience—and the rapidity and ease with which it may be erected are considerations of high value after a disaster, such, for instance, as an explosion. Furthermore, in fighting mine fires it may in many cases be used to good effect. This will be particularly true in those instances where the exact location of the fire is unknown and where it is desired to attack it from above. Under such circumstances sometimes thousands of feet of narrow passages must be driven. As every mining man knows, these are extremely difficult, if not impossible, to ventilate by ordinary means.

In such emergencies also time is, or may be, an all-important element. No man can do his best in an atmosphere depleted of its oxygen or vitiated by smoke or explosive fumes. Pure air in adequate volume delivered at or close to the working face will not only promptly clear away powder smoke and the like but will assure a maximum of effort from the workmen employed. With an outfit of this kind such an emergency can be met without delay.

## Reports and Investigations State Geological Surveys and Mining Bureaus

### Coal Reserves of Cambria County, Pa.

BY JOHN F. REESE

**C**AMBRIA County, Pennsylvania, has six coal beds that are now of economic interest. In order of their present importance as shipping coals these are the Lower Kittanning, Upper Kittanning, Lower Freeport, Upper Freeport, Clarion and Brookville.

The many mines working the Lower Kittanning bed and exposures of its outcrop have furnished many measurements of its thickness, thus making possible an accurate and reliable computation of the quantity of coal contained. The "B-Rider" coal of the Bens Creek area has been computed along with the Lower Kittanning coal in this report.

The Lower Kittanning is the most persistent bed, contains the greatest coal reserve and is the largest producer within the county, yielding more than 8,100,000 tons annually.

A fair amount of information as to the thickness and persistency of the Upper Kittanning bed is available. This measure is best suited for mining in the Patton, Portage, South Fork and Johnstown areas.

A fairly accurate estimate of the quantity of coal in the Lower Freeport bed is made possible by many measurements at mines and outcrop. This measure attains its best development for mining in the Barnesboro-Spangler area.

The extensive outcrop of the Upper Freeport bed throughout the county, and its mine development in various localities, furnish a fair number of measurements for an accurate estimate of its quantity. It is

mined most extensively in the Barnesboro, Hastings, Gallitzin and Cresson areas, where it attains its best thickness.

The Clarion or A coal has been computed as of economic interest in Reade and Richland townships, where it has been mined. Little is known of its thickness and extent, and only areas surrounding mining developments or proven ground have been computed.

The Brookville or A coal bed has been considered as of interest in five townships, namely, Adams, Cresson, Dean, Gallitzin and Richland. Only areas surrounding operations or proven ground have been computed, as little is known of the extent and persistency of this coal.

Cambria County has a total area of 697.4 square miles. The result of computing the coal reserves in this county based on the latest maps, engineering data, and methods is shown in the accompanying table. The figures are here given as computed. It should, however, be distinctly understood that while the acreage of each of the beds has been accurately calculated, the reliability of the average thickness of the coals employed in the computation of tonnage decreases for the various beds in the order following: Lower Kittanning, Upper Freeport, Lower Freeport, Upper Kittanning, Brookville and Clarion. Thus, while the figures for the Lower Kittanning bed are conservative and probably reliable, those for the Clarion coal may be much too small or many times too large.

Detailed tables of the coal reserves in each township have been prepared and will appear in printed form in a report now being written on the bituminous-coal fields of the state. They can be consulted in the office of the Topographic and Geological Survey; or figures for a single township will be mailed from that office on request.

COAL RESERVES IN CAMBRIA COUNTY  
(In Net Tons)

Bed	Original Deposit	Mined Out	Recoverable
Upper Freeport.....	1,016,000,000	74,050,000	711,920,000
Lower Freeport.....	1,337,800,000	85,200,000	900,730,000
Upper Kittanning.....	922,500,000	89,700,000	612,430,000
Lower Kittanning.....	2,010,300,000	216,800,000	1,348,100,000
Clarion.....	32,400,000	1,000,000	21,300,000
Brookville.....	64,000,000	150,000	43,600,000
Total.....	5,383,000,000	466,900,000	3,638,080,000

## Valuation of Coal Land Leaseholds In Tax Returns

BY W. B. REED  
Washington, D. C.

IN EVERY coal field there are operations on leased land. Many companies mine both from leaseholds and from land owned in fee, but not all of those who work under leaseholds appreciate the value of the lease or realize that they are entitled to establish on their books and before the Income Tax Bureau a proper value for this form of property. In particular those operators who had substantial earnings prior to March 1, 1913, or who have preferential royalty rates or favorable conditions are in position to profit by taking advantage of this feature of the tax law and regulations.

Under the revenue acts of 1918 and subsequent years the value of a lease may be amortized. The procedure is comparatively simple. The Treasury Department has a Form E; rather formidable it is true, but one that most companies find it necessary to file. The facts necessary for a lessee to establish the value of a leasehold are assembled when Form E has been filled out. But the Treasury Department does not make the deduction in tax that corresponds—the lessee must set up his claim.

Whatever value was vested in the ownership of any property on March 1, 1913,<sup>1</sup> must in the event of a subsequent sale of that property be recognized as capital, and be returned to the owner free from income tax, regardless of the fact that that value may have been in excess of its cost. Consequently revenue legislation has provided that profit in the sale of such assets shall be ascertained by taking the fair market value as of March 1, 1913, as the basis of value. Therefore, it has always been recognized that the taxable profit from the sale of a mining lease shall be its value in excess of the March 1, 1913, value. This being the case, the importance of establishing such values in the case of the sale of such property is obvious.

### SUPREME COURT RULING AWAITED WITH INTEREST

It would have seemed natural for Congress to provide for deduction of depletion, or, more strictly speaking, for the amortization of such leasehold values as allowable deductions in ascertaining taxable income under the various revenue laws, but it was not until the passage of the act of 1918 that proper consideration was given to this situation and an allowance provided to the lessee. The Supreme Court has decided that under the 1916 law the lessee is not entitled to such a deduction. No doubt before long a specific ruling by the same body will also be had as to the status of such deductions under the law of 1917.

Full recognition of the rights of the lessee operator to recover his equity in such property by appropriate deductions for depletion based on cost or the value at March 1, 1913, was first given in the 1918 tax laws. Of course it was always in order that the actual cost of acquiring such a lease might be amortized, but the appreciation in value was not therefore recognized.

<sup>1</sup>The sixteenth amendment to the Constitution of the United States provides: "The Congress shall have power to lay and collect taxes on incomes, from whatever source derived, without apportionment among the several states, and without regard to any census or enumeration." This amendment was ratified by a sufficient number of states by Feb. 25, 1913, to insure its adoption. For convenience of accounting, however, March 1, 1913, is referred to in subsequent legislation as the date upon which the previous prohibition on Congress to lay taxation without apportionment among the states was removed.

The Bureau of Internal Revenue has issued voluminous regulations as to how values may be established. They may be summarized as: cost; sales or transfers of similar properties; royalties and rentals; values for capital stock or local taxation; records of litigation; probate court inventories; disinterested appraisals, and present value of eventual earnings.

Because comparatively few representative transfers of operating coal-mining property took place around the basic date of valuation, March 1, 1913, and because the other methods offer little for comparative value most valuations in this field are determined by the present-value method. This method is one generally recommended by the engineering profession and is equitable in that it gives recognition to the value of management as a factor. Two properties may be of apparently similar nature, yet one be a failure and the other a success. As a former official of the Internal Revenue Bureau put it: "A dollar of capital which will earn a quarter is worth more than a dollar which will earn a nickel."

### R. V. NORRIS DEFINES "PRESENT VALUE"

A leasehold is a property right and to appraise its present value requires first a knowledge of the proper method and second certain basic facts. R. V. Norris<sup>2</sup> defines present value as follows: "The total value of a property at any date is the value of the future earnings of such property discounted to that date. The value of the mineral in the ground at any date is the total value of the property as above, less the value of the present and prospective expenditure for plant, development and equipment necessary to recover such mineral discounted to the same date."

The Treasury Department has held that taking into consideration the hazards of mining and marketing, a fair basis of valuation in the bituminous coal industry is obtained by using a discount factor of 8 per cent with a sinking fund provision of 4 per cent. Many engineers, however, will not agree with this basis.

Let us illustrate the theory of the valuation of a leasehold on the basis of earnings in the period prior to March 1, 1913. Assume that in the period prior to 1913 the average earnings<sup>3</sup> were 30c. per ton, that the life of the reserves after the date of valuation was twenty years and that the average annual production is 100,000 tons. This would give an annual profit of \$30,000 and prospective profits in twenty years of \$600,000. The present worth of the eventual earnings, \$600,000, discounted on the basis of 8 per cent and invested in a sinking fund at 4 per cent is found, by using Hoskold's formula, to be \$264,126. If from this is deducted the cost of plant, present and prospective, assumed here to be \$125,000, we find the present value of the leasehold to be \$139,136. On the basis of the 2,000,000 tons unmined at date of valuation, this gives 6.956c. per ton, which may be deducted as depletion. If the annual production is 100,000 tons we have \$6,956 allowable deduction and therefore a decrease of that amount in the taxable income.

Using the 1918 income tax rate for corporations of 12 per cent, plus 65 per cent, the highest bracket of the

<sup>2</sup>"The Federal Income Tax," R. V. Norris, Columbia University Press, page 229.

<sup>3</sup>The proper figure for average earnings here is obtained after including in "cost" the things defined by Article 206 of Income Tax Bureau Regulations 62, as those in connection with producing, preparing and marketing the mineral product sold, exclusive of federal income and profits taxes, allowable capital additions and deductions for depreciation and depletion, but including cost of repairs and replacements necessary to maintain the plant and equipment at its rated capacity and efficiency.



excess profits tax into which many of the coal companies rates ran, we have possible a 77 per cent tax. Taking 77 per cent of our \$6,956 we have \$5,556 as the maximum saving through proper valuation of leasehold. Of course if the earnings in the period before 1913 were higher than the assumed average of 30c. or if the life of the coal is less than twenty years the per ton value would be correspondingly higher and the saving greater; if lower, the reverse would be true.

If the lease have a preferential rate of royalty as compared with neighboring properties made under similar conditions and at approximately the same date, values may be assigned upon the basis of such preferential values, without the necessity of proving on the basis of earnings.

It is possible that at times a value may exist in a leasehold for the purpose of invested capital. These cases are the most difficult to establish, but if the lease was a proven tract and was turned over to a corporation in exchange for capital stock of the corporation, the value of the lease may be "paid in surplus" within the meaning of the law and be capitalized as such at its value at date of acquisition, subject to the limitations, for the year 1917, of the par value of the stock or shares specifically issued therefor.

### Recloses Instantly Circuits Temporarily Short-Circuited or Overloaded

**A**UTOMATIC reclosing equipment for use on direct-current circuits of 300 and 500 volts has recently been designed and constructed. Its function is to protect apparatus in case feeders become short-circuited or overloaded, and at the same time to insure a continuity of service when the trouble is only temporary.

This equipment, which is constructed by the General Electric Co., is designed for use on circuits employing stub-end feed, a combination of stub-end and

multiple feed, or in combination with a sectionalizing switch or sectionalized feeder.

The manner of its operation on a stub-end field—that is, one where the load is supplied by current from a single source—is so typical that once described the reader will have a clear idea of the manner in which the apparatus functions under other circumstances. The various devices that go to make up the equipment are a shunt contactor, an instantaneous overload relay, a reclosing relay, a control power switch and a load-indicating resistor. These devices are connected in accordance with the accompanying wiring diagram.

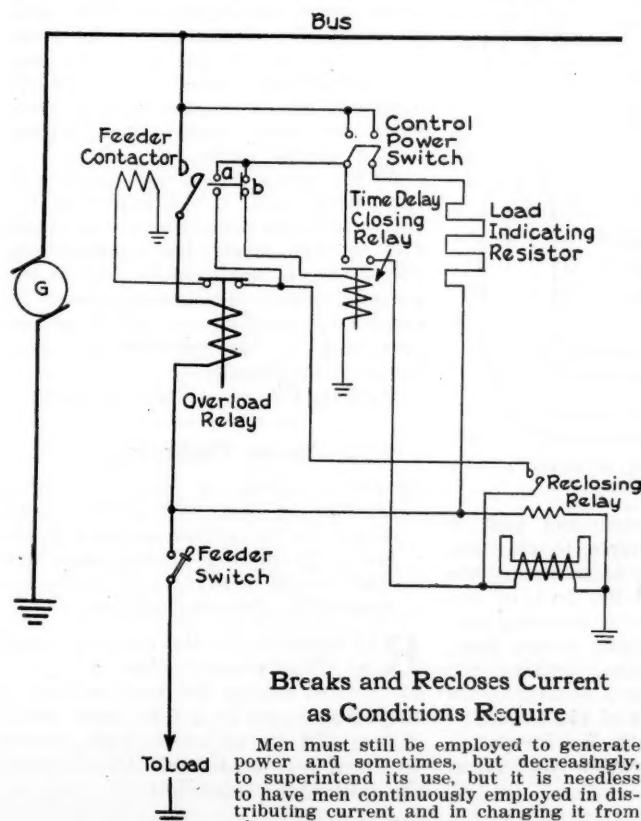
The sequence of operation of the equipment in case of a short-circuit or heavy overload on the feeder is as follows: The overload relay opens its contacts, thus de-energizing the coil of the contactor, which opens instantaneously, disconnecting the load from the power supply. When the contactor opens it closes the auxiliary switch (b; see diagram) which energizes the coil of the time-delay circuit-closing relay, which starts to close. The time delay is inserted at this point in the sequence in order to allow conditions on the feeder line to become stable. Closure of this relay completes the circuit through the lower coil of the reclosing relay.

#### OPERATES SOMEWHAT LIKE A VOLTMETER

The reclosing relay has two coils, both of which must be energized before the device will function. Its operation somewhat resembles that of a voltmeter, the lower coil being analogous to the permanent magnet of the meter while the upper one furnishes excitation to the movable element on which the contacts are mounted. The relay contacts will close only when the voltage drop across the load, with which the upper coil is in parallel, is enough to cause that coil to excite the movable elements sufficiently to close them. When the load resistance is zero, as in case of a short-circuit, there is no voltage across the upper coil, but when the load resistance is infinite or when open-circuit conditions exist, practically full voltage is impressed across the upper coil, because its resistance is much greater than that of the load-indicating resistor. Consequently it is possible to obtain an intermediate point and calibrate the reclosing relay so that, with a definite value of resistance in the load-indicating resistor, the equipment will not close on a load in excess of a predetermined value.

As long as the trouble on the feeder continues the reclosing relay will remain open, even after the time-delay relay has closed, because the voltage across the load is not enough to close the contacts. As soon as the trouble has cleared, however, and the load resistance has passed the predetermined point, the relay will close, energizing the coil of the feeder contactor which then closes, in turn closing the auxiliary switch (a) which seals it in. Closure of the contactor reconnects the load and de-energizes the time-delay relay which opens its contacts.

The equipment for circuits having a combination of stub-end and multiple feed makes use of a contact-making voltmeter to indicate when the potential difference between the feeder and the source of supply has fallen to a safe reclosing value. When the voltage has so decreased, the feeder contactor recloses in the same sequence as in the former instance. A relay connected in parallel with the contact-making voltmeter determines whether the equipment is to operate on multiple or a stub-end feed.





# Problems of Operating Men

Edited by  
James T. Beard



## Examples of Successful Gravity Planes

**Three-Rail System, Top to Bottom of Plane, with Four-Rail Passing Tracks — Arrangement Wholly Eliminates Switches—Tippie Set on One Side of Incline as a Safeguard Against Runaway Cars**

REFERRING to the inquiry of C. M. Shaffner, regarding his proposed installation of a gravity plane, *Coal Age*, Aug. 10, p. 211, kindly permit me to give a brief description of an incline that has been in successful operation for some time, at one of our mines.

In doing this, I will refer only to a few of the general features that have a particular bearing on the successful operation of the plane. Without knowing the exact conditions that surround the situation to which reference was made in the inquiry, it is clear that any plan proposed would have to be modified in detail to fit the case in hand.

### THREE-RAIL SYSTEM AFFORDS MANY PRACTICAL ADVANTAGES

With this preamble, let me say I would heartily recommend a three-rail system, extending the full length of the incline, except for the passing tracks midway of the plane, where there must naturally be four rails provided.

One important advantage of a three-rail system is that such an arrangement wholly eliminates the need of switches at any point on the incline. It provides separate loading and empty tracks to be used exclusively by the loaded and empty cars, respectively. This is made possible by the installation of a vertical type of incline machine in the drumhouse, which is located from 50 to 75-ft. above the head of the incline, as indicated in the accompanying figure.

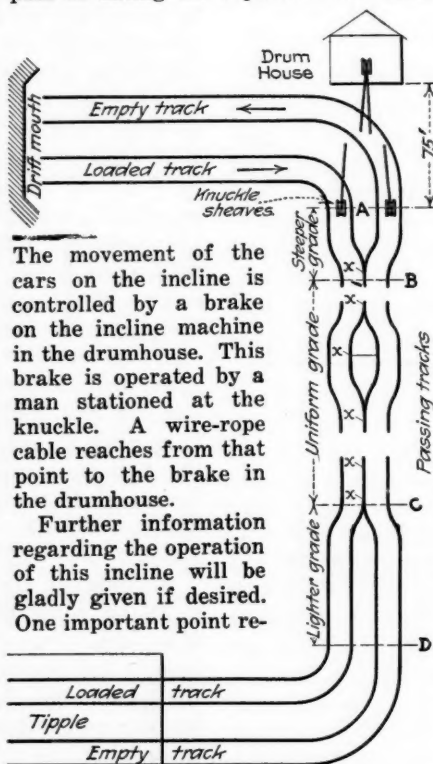
### EQUIPMENT, GRADES AND TRACK ARRANGEMENTS

There are different types of these machines, adapted to suit different conditions, and a machine should be selected of suitable size and kind to correspond to the weight of cars to be handled and the service intended. This is an important consideration among the forty or fifty different styles and sizes of these machines now on the market.

Referring to the figure, starting at the knuckle, at A, for a short distance to B, the grade is made steeper than the uniform grade of the incline reaching from B to C. Then, from C to D the grade is made much lighter. This is an important feature, as the loaded cars descending the steeper grade AB serve to overcome the inertia and accelerate

the system. At the same time, the ascending empties are passing over the lighter grade from D to C.

Evidently, both tracks, at B and again at C, must be on the same level. Above the knuckle at A and below the coupling point at D, the tracks are graded to favor the movement of the loaded and empty cars respectively. At the various points marked x, in the figure, there are provided short lengths of 2 x 4-in. oak pieces, for the purpose of lifting the rope over the rails.



PLAN OF THREE-RAIL SYSTEM FOR A GRAVITY PLANE

mains to be mentioned and that is the setting of the tippie to one side of the incline, in order to safeguard the lives of the men at the foot of the plane, in the event of a runaway car, which is liable to happen at any time. This arrangement also obviates the necessity of providing a safety switch or droplog at the foot of the incline.

RICHARD MACDOUGAL,  
Supt., Crafton Branch, No. 8 Mine.  
Pittston, Pa.

## ANOTHER LETTER

IN connection with the suggestion offered by D. S. Allison, *Coal Age*, Sept. 14, p. 415, regarding the use of three rails to replace the single track, above the passing point, on a self-acting incline, it may be of interest to state that such a system has been installed by the American Manganese Mfg. Co. of this place, at one of their mines.

At the head of the incline is located a set of tandem wheels, or gravity sheaves, of the type commonly known as "Figure 8." This machine is placed directly under the tracks leading into the mine. As has been stated the three-rail system is only used above the point where the cars pass each other half-way up the incline. Below this point a single track is used.

### PLANE EQUIPPED WITH PERMANENT CARS AND AUTOMATIC SWITCH

The automatic switch, at the lower end of the passing tracks, in this case, is operated by a weighted lever that keeps the switch set for the empty track, except as it is forced open by the loaded cars passing down the plane.

On this incline, there are but two permanent cars used, which are attached to the two ends of the rope, respectively. These cars are equipped with drop doors, at their lower ends. As a car reaches the foot of the incline the door is automatically raised by an attachment and the car dumps its load, after which the door again closes, locking with a spring catch.

At the upper end of the incline each car passes under a bin, located at the entrance of the mine, where it is loaded and is then ready for another trip. While only a small car is used at the present time, this arrangement is capable of handling an output of 500 tons in 8-hr. Its operation has given complete satisfaction.

Dunbar, Pa. JOHN STANNIS.

## Room Timbering

*Cantilever action of roof follows extraction of coal—Permanent posts should not be carried too close to the face—Temporary posting there will often avoid breaking of timbers—Systematic timbering advised.*

REFERRING to the question asked by "Timberman," *Coal Age*, July 27, p. 136, asking the best method of timbering rooms in a 6-ft. seam under 250 or 300 ft. of cover, with a good roof and bottom, I would like to make the following suggestions:

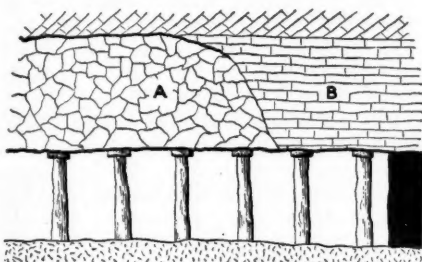


It is important, of course, to use timbers of a suitable size. In this 6-ft. seam the small diameter of the posts should not be less than 6 in. Good cap pieces from 3 to 4 in. should be used over the posts, but it will not be necessary to use foot boards.

Assuming that these conditions have been complied with and that the rooms are driven systematically, the continued breaking of the posts under this cover would seem to indicate that there is a greater pressure operating than that due to the weight of the overburden alone.

#### CANTILEVER ACTION OF ROOF FOLLOWS EXTRACTION OF COAL

The extraction of the coal always develops a cantilever action in the roof. In my sketch I have tried to illustrate the effect of this action. The gradual settlement of the roof on the timbers causes the strata to break a short distance back from the face of the coal. In the figure the portion A represents



STRATA BREAKS A SHORT DISTANCE FROM FACE OF COAL

the area of complete settlement, while that marked B indicates where settlement is in progress.

As explained in the reply to this inquiry, the unbroken strata above overarches the opening, causing the weight of the overburden to rest on the ribs, and the weight of the loosened portion A above rests on the permanent timbers beneath it.

#### POSTS AT THE COAL FACE MUST NOT BE SET TOO TIGHT

The point I wish to emphasize is that temporary posts should be set under the solid portion B close to the face. If these posts are set tight between the hard roof and floor they will be broken by the weight coming on them, being subjected to a much greater pressure than the permanent posts farther back from the face.

If the breaking of the posts is more pronounced and continuous within a limited distance of the face it would seem that the posts have been set too tight under that portion of the roof. On the other hand, if the breaking of the posts extends further back from the face we must look elsewhere for the cause.

It is a good plan to drive several rooms abreast of each other and at a uniform width and distance center to center and watch the effect in producing a more uniform distribution of pressure. It might be well to use a line of light cogs up the center of the room

instead of the middle line of posts. This would be expensive, however, and can only be advised as a last resort.

#### CAPS BEING CRUSHED SHOW POSTS ARE SET TOO SOLID

From the statement that the caps do not appear to serve their purpose when the posts take the weight, I infer that the trouble occurs at the face rather than down the length of the room. I naturally conclude that the compression of the caps is not sufficient to allow for the settlement that must take place.

That being the case, it is not strange that the posts are broken since, as stated in the reply to the inquiry, the weight of the overburden is far in excess of the strength of the timber. Since this settlement is irresistible, the most practical course to pursue is to make the posting at the face temporary and not drive them tight.

The conditions described would also suggest the advisability of adopting a systematic method of posting by which the roof pressure will be more equally distributed.

I. C. PARFITT.

Washington, D. C.

#### Testing of Safety Lamps

*Every lamp must be tested—Opinions differ in regard to character of test—Use of lamps approved by the Federal Bureau—Blowing test effective if properly made.*

IN HIS letter regarding the testing of safety lamps, *Coal Age*, July 13, p. 60, Joseph Cain raises the question as to whether the method of testing a lamp by blowing against it, as he has described, should not be adopted at all mines where such lamps are in use. Mr. Cain also asks whether it is possible to tighten a lamp to such an extent as to endanger the breakage of the glass through expansion due to the heating of the lamp.

It requires no argument to prove that a safety lamp should be tested for any defects, either of construction or assembly, before being entrusted to a miner. However, the manner in which this testing should be done is a question on which all may not agree. Before the lamp is assembled, it must be carefully examined in every part to ascertain if they are in perfect condition and there are no defects that would render the lamp dangerous.

#### PURPOSE OF FEDERAL BUREAU OF MINES TESTING OF SAFETY LAMPS

When a lamp has been assembled its further testing is for a twofold purpose: 1. To demonstrate that it will not pass the flame in a current of high velocity. 2. That it will not pass the flame by reason of an internal explosion, under any conditions that may reasonably be expected to arise in the daily operation of the mine.

As far as I have been able to observe, very few mines have facilities for making a test to demonstrate the first of the two conditions mentioned. In fact, such a demonstration is not necessary,

inasmuch as all approved lamps have been subjected to such tests at the Federal Testing Station. The fact that they have been approved by the Bureau of Mines is evidence that they have stood those tests successfully.

My point is that no mine should be worked with any other than approved safety lamps, if safeties are required at all. Then, if these lamps are maintained properly, there will be no necessity of their being subjected to a further test to ascertain if they will pass flame in a current of high velocity.

#### TESTING FOR INTERNAL EXPLOSION MORE IMPORTANT

Personally, I consider the testing of a lamp, for the second purpose named, of far more importance in determining its safe condition. As a matter of fact, there are few mines in which the velocity of the air current is as great as that to which the lamp has been subjected in the Federal Bureau test. Such velocities, if they occur at all, would only be found on the main intake and return airways of a mine.

Now, regarding the blowing test mentioned by Mr. Cain, it might be said that custom has sanctioned this practice, which has been in use a long time, in most localities, chiefly owing to its thoroughness and reliability, which is apparent to everyone. My experience is that when a lamp has been properly examined and assembled there is little danger of its being unsafe, except that it may leak air around the asbestos washers and these gaskets should receive careful inspection.

#### HARDENING OF GASKETS

At times, the gaskets become hard from long use and continued compression, which gives them a glazed surface and makes them ineffective, particularly if they are dirty. To remedy such a condition, the washer should be scraped to remove the compressed dirt and produce a soft surface that will form a better contact with the glass; or new gaskets must be used in place of the old ones.

In regard to the flame of a safety lamp being extinguished by the carbon dioxide contained in the breath, as suggested by one writer, it should be remembered that the purpose of the blowing test is to ascertain if the flame is at all deflected by reason of the air blown against the lamp entering the combustion chamber. If the flame is at all disturbed or deflected, the lamp is unsafe. It seems to me that the extinctive effect of the breath is immaterial, in respect to ascertaining the security of the lamp.

#### MAKING THE BLOWING TEST

In making this test, I have found that the lips should be placed in close contact with the lamp, at the suspected points. If the lamp is held even a short distance away from the lips, the air blown against it is deflected by the circular form of the lamp, and the effectiveness of the test is destroyed. This may not seem sanitary, but it makes

the test a safe one. For the purpose intended, I consider that the blowing test, if properly made, is one to be strongly advocated.

#### TIGHTENING THE LAMP

While I do not regard the tightening of the lamp, before it has become heated, as being particularly dangerous, I would not advocate the practice if there is any possibility of the lamp being retained for any length of time in a close atmosphere charged with gas, such as a fireboss will frequently encounter. Lamps burning a volatile oil are very susceptible to temperature changes. Such lamps should be tightened only sufficiently to secure an airtight joint around the top and bottom of the glass cylinder, and this should not endanger the glass by reason of expansion through heating.

Washington, D. C. I. C. PARFITT.

#### ANOTHER LETTER

**I**N DISCUSSING the question of properly testing a safety lamp before entering the mine, some writers have claimed that when it is possible to blow out the light of a safety lamp, either the lamp has not been put together rightly or there is some defect in its construction.

It has always been my understanding that something is not right when a light can be extinguished by blowing onto the lamp; but, today, many safety lamps can be put out in this manner. If anyone doubts that statement, let him blow through the airholes of his lamp, just below the glass.

#### CIRCULATION ASCENSIONAL

While it may not have a direct bearing on the subject matter of this discussion, I think it will be well to draw attention to two features that have not as yet been mentioned regarding the construction of safety lamps. The first has reference to the air entering the lamp at a point below the flame, so that the circulation within the combustion chamber and the chimney of the lamp will be ascensional.

It is well known that where the air enters a safety lamp through the lower part of the gauze chimney and above the glass, it must descend in order to reach the flame. This is the trouble with the old type of Clanny lamps. The descending and ascending currents thus formed within the combustion chamber always cause the lamp to smoke. Moreover, there is formed what I would call a well of burnt air or "stythe" (CO<sub>2</sub>) that settles around the flame. This well of extinctive gases not only dims the lamp, but makes it impossible to test correctly for fire-damp.

#### EFFECT OF CARBON DIOXIDE

It may be argued, and it is true to a considerable extent, that the presence of carbon dioxide in the combustion chamber will lessen the force of any explosion that might occur within the lamp, which is very liable to happen

when the lamp is in the hands of a careless fireboss.

Owing to the relighting devices, in many safety lamps in use today, a fireboss is apt to be less careful in making tests for gas. He will often run the risk of an explosion within his lamp. However, most of the lamps equipped with relighting devices enter the air below the flame, thus creating an upward circulation within the lamp and clearing the combustion chamber of extinctive gas. This construction, I believe, reduces the liability to danger from internal explosion.

#### PREFERENCE FOR SMALL LAMP

The second feature to which I want to refer relates to the size of the gauze chimney. To my notion, a small lamp is stronger and better able to stand hard usage. It occupies less space, is easier to handle and a thin layer of gas at the roof is more readily reached when the height of the lamp is reduced.

Present day practice, with a large number of our firebosses, is to carry an electric lamp in their cap, which gives a good light and helps to expedite their work. It is this custom that has given rise to a desire for small testing lamps.

Linton, Ind. W. H. LUXTON.

[The reference of this correspondent to the desire of some fireboss to use a small lamp recalls the attempt made some years ago to introduce a minia-

true Davy lamp, for the purpose of testing for gas in mines. When the knowledge of this came to the late James E. Roderick, then chief of the Department of Mines, in Pennsylvania, it brought from him a prompt protest against the use of such lamps, as being dangerous for many reasons.

#### STANDARD SIZE OF LAMP DETERMINED

First, the size of the lamp and the small space inclosed within the gauze chimney, it was claimed, made the little lamp a menace to safety when exposed to a body of gas in the mine. Again, its small size made it an object that would naturally be tucked away in the pocket of a fireboss or foreman, where it would accumulate dirt, be upset and leakage of oil would render it unsafe for testing.

As the result of protracted experiments, the eminent chemist Sir George Humphry Davy, found that the best results were obtained in the use of what has since become a standard gauze for safety lamps, containing 28 wires (No. 28 B.w.g.) to the inch, or 784 openings per square inch. Davy drew attention to the danger arising from the use of gauze chimneys of too large a size, as in the old Scotch Davy; or a chimney that was too high, as in the Pieler safety lamp. Similar danger also exists in the use of too small a gauze chimney, by restricting the volume within the lamp.—EDITOR.]

## Inquiries Of General Interest

### Use of Single and Double Cables for Electric Gathering Locomotives

Large Percentage of Single-Conductor Gathering Reels in Use  
— Track Requirements — Two Types of Double-Conductor  
Cables—Advantages of Single- Over Double-Conductor Cables

**A**FTER reading numerous valuable replies to inquiries that have appeared in *Coal Age*, I have decided to ask for a little information myself. We are developing a new mine in which we plan to operate gathering locomotives. Up to this time, however, we have been unable to decide whether it is better to use a single or a double cable to permit the locomotives to reach the faces of the rooms in the mine. My personal preference is for the single type of cable, for many good reasons that I will not take the time now to state. But our foreman says he has never used the single type of cable and is inclined, therefore, to favor using the double cable. One of these double cables has been and is still in use in our mine, and the foreman argues that it is well to let good enough alone and not experiment with a type of cable that we have not used before.

As I regard the situation, inasmuch as we expect to use several of these cables in the future, it is important to ascertain the views of *Coal Age* and others regarding the relative advantages of these two types of conductors, in gathering-locomotive haulage. My purpose in asking this information is to ascertain the most economical method of operating gathering locomotives equipped with reel and cable so they can reach the face.

Stillwater, Ohio. ELECTRICIAN.

In order to obtain first-hand information on this subject, we have asked Graham Bright, general engineer for the Westinghouse Electric & Mfg. Co., to give the readers of *Coal Age* the benefit of his knowledge and experience, regarding different types of gathering conductors. Mr. Bright writes, in substance, as follows:



"A large percentage of electric gathering reels are of the single-conductor type. In mines where the rails, on room entries and in the rooms turned off those entries, are laid with a fair amount of care and the fishplates bolted up so as to afford a good rail return for the electric current, there is no true reason why a single-conductor cable will not give satisfactory service.

The double-conductor cable has been used largely, in the past, where wooden rails were laid in the rooms; or where iron rails were used but improperly laid and the fishplates loose or missing. Under these conditions, it is quite evident that a single cable could not be used to advantage, if at all. Today, most of the mines realize the importance of keeping their tracks in fair condition, as derailments are not only expensive but affect the output to a very considerable extent.

There are two types of conductor cables; namely, the twin-conductor cable, consisting of two parallel wires bound together to form a single cable, and the concentric type of cable. I regard the latter as being much superior to the former. Most of the double-conductor cables manufactured have been of the twin-conductor type, which is very difficult to reel up evenly,

and makes the operation even harder of accomplishment when it becomes necessary to use a cable that has been spliced.

During the last few years, I have been recommending the concentric type of double-conductor cables, wherever it is necessary to use a double cable owing to poor track conditions. The concentric type has the advantage that it reels much more evenly than the twin-conductor cable. In the concentric type, the ground side being outermost, no particular damage is done if the outside layer of insulation becomes worn off in operation. Though, in the use of this type of cable, repairs may be a little more difficult, this disadvantage is more than counterbalanced by the advantages gained.

Allow me to advise that wherever possible the single-conductor cable should be used, with a type of reel having a small inertia in the drum, which will insure easy winding and prevent the heavy stresses caused by a type of drum having a large inertia. It is my belief that money spent in providing a fair rail return, on side entries and in the rooms, will more than balance the extra cost of double-conductor cables and the consequent high cost of maintenance and additional delays.

serving its effect on small birds or mice confined in a cage. Hydrogen sulphide is detected by its smell.

Carbon dioxide is dangerous when accumulated in low and badly ventilated places in mines, because the gas contains no available oxygen for the support of life, and its presence depletes the oxygen of the air, causing suffocation and death. The other three gases named are inflammable and form explosive mixtures with air.

These dangers are prevented, as far as possible, by providing an ample ventilating current to sweep them from their lurking places in the mine.

The Indiana Mine Law (Chap. 258, Sec. 11) requires that 100 cu.ft. of air, for each person, and 300 cu.ft., for each mule, be kept in circulation, in all main and cross-entries and working places in the mine, to an extent to keep it free from standing gas and in a fit state for work. The law further provides for the examination of the mine by a competent fireboss using a safety lamp, the examination to be made before each shift.

**QUESTION**—Discuss haulage tracks in mines with respect to bed, gage, weight of rails, ties and nails, fishplates, curves, grades, switches, ballast, drainage; and give the law respecting wide entry and refuge holes.

**ANSWER**—All tracks on haulage roads must be well bedded and drained by a suitable ditch at the side of the road. Main roads should be well ballasted with good material. The gage of the track, weight of rails, ties, nails and fishplates must be determined by the size and capacity of the mine cars used. This is largely modified by the height of the seam as determining the headroom on the roads. In general, in locomotive haulage, a 3 or 3½ ft. track gage is used, with rails varying from 40 to 60 lb. per yard, fastened by 3½-in. spikes to 6- or 8-in. ties and bolted together with fishplates to fit the rails.

The grades on the main roads, as far as possible, should favor the movement of the loaded cars, a 1 per cent grade being preferred where this is practicable. Sharp curves in the track should be avoided and all switches must be carefully laid by competent trackmen.

The Indiana Mine Law (Chap. 197, Sec. 1) provides for a clearance space, on one or both sides of a road continuously, of not less than 2 ft., measured from the rail to the rib. This space must be kept free of all obstructions such as props, loose slate and other material. This does not apply to mines in the block-coal fields, working Seams 3 and 4, commonly known as the lower and upper veins, in Indiana. Chap. 258, Sec. 13 provides for refuge holes, not less than 3 ft. deep, measured from the side of the car, and 4 ft. wide, at distances not more than 20 yd. apart, to be constructed on all single-track haulage roads using power, and on all gravity inclines on which persons employed in the mine must travel afoot, in going to and from their work.

## Examination Questions Answered

### Indiana Mine Bosses' Examination Indianapolis, 1922

(Selected Questions)

**QUESTION**—Discuss the subject of mine ventilation, setting forth the purposes; mechanical devices and their uses; quality of air required and how determined; quantity of gas and how determined; humidity and temperature, how determined; mine gases, how detected; their danger and how prevented; and give the law respecting mine ventilation.

**ANSWER**—Briefly stated, the purpose of ventilation is to furnish pure air throughout the mine, by conducting an air current in one or more splits so that it will sweep the working faces, in quantity and velocity to dilute and carry away the noxious gases that accumulate in the workings.

Many small, non-gaseous mines are ventilated by a furnace constructed near the foot of the air shaft. In all the larger and up-to-date mines, however, either a centrifugal or a disk fan is used to force the air into the mine or exhaust it from the mine. In either case, a free circulation of air is produced in the airways and throughout the workings.

The Indiana Mine Law requires the circulation of 100 cu.ft. of air per

minute, for each person, and 300 cu.ft. per minute, for each mule, employed in the mine. The air is measured by means of an anemometer, which shows the velocity of the current, and that multiplied by the sectional area of the airway gives the volume of air in circulation.

The percentage of gas in the return air current is first estimated by observing the height of the flame cap in a safety lamp exposed to the current. Taking this percentage of the total volume of air in circulation gives the quantity of gas generated in the mine.

The humidity and temperature of the mine air are ascertained by observing the readings of the wet-and-dry-bulb thermometer. This instrument is often called a hydrometer or psychrometer. The reading of the dry-bulb thermometer determines the temperature of the air.

Mine gases are detected mostly by observing the effect of the gas on the flame of a safety lamp. Methane or marsh gas causes a flame cap, while carbon dioxide makes the lamp burn low or puts it out entirely. Carbon monoxide is generally detected by ob-

## State of Indiana Mined Coal at \$8.79 Per Ton During the Strike

Financial reports from James A. Cooper, federal receiver for the Rowland Powers Collieries Co., of Staunton, Ind., show that the cost of digging during the coal strike was \$8.79 a ton, for which the state paid the company \$4 a ton, a loss of \$4.79 a ton accruing to the company, for which it is asking no reparation or indemnity. Attorney General Smith of Indiana said the cost of maintaining the 1,200 soldiers in the field was approximately \$50,000. Approximately 1,754 tons of coal was mined under state protection, making the cost per ton about \$37.35.

In a letter from Mr. Cooper it is set forth that the stockholders, bondholders and creditors of the company joined in hearty support of the loss. He pointed out that a great deal of this apparent loss would have accrued to the company at any time it reopened its mines, as the idleness of the mines had wrought havoc to the equipment. The expenditure of maintaining the soldiers, Governor McCray points out, was made in the same spirit in which a city council appropriates a certain sum annually for the maintenance of the police department for the protection of its citizens.

## Utah Coal Mining Feels Awakening In Western Steel Industry

Utah coal probably soon will be used in greater volume as one of the bases for the expansion into Utah of big new steel combines on the Pacific coast. Already the Columbia Steel Co., a \$15,000,000 corporation formed in July, is getting ready to build the Carbon County R.R. to tap coal fields near Sunnyside which are owned by the Utah Coal & Coke Co. L. F. Rains, president of the Carbon Coal Co., will be at the head of the railroad company. The other big entry into Utah is being made by the newly organized Pacific Steel Corporation, which is a consolidation of steel properties up and down the coast owned by the Pacific Coast Steel Co. and the Southern California Iron &

Steel Co., and of iron ore and coal properties in Utah owned by the Milner estate.

The ore bodies in Iron County held by this new merger total about 4,000 acres and the coal properties, largely in Carbon County, about 8,000 acres. About 25 miles of railroad will be constructed by interests allied with the new Pacific Steel Corporation.

## Distillation of Coal from Oil Makes Rapid Strides in Great Britain

There has been a remarkable increase in the use of oil fuel in England during the last fifteen years. During this time the complete substitution of coal by oil fuel in the navy has been effected. In the mercantile navy the development has been slower, but during the year 1920-1921 58 per cent of the new vessels classed under Lloyds register were fitted for burning oil fuel.

The natural source of fuel in England is, of course, coal, followed at a considerable distance by peat and oil shale. Regarding the latter it is improbable that under present conditions the output of Scottish shale oils can be increased by an amount which will have any appreciable bearing on the problem. Since the great part of the heat units present in coal as mined appears in metallurgical coke it forms an excellent and absolutely smokeless fuel, and it is necessary for the commercial success of that process that domestic users appreciate its superiority.

The results of an investigation of the oil produced at East Greenwich by the distillation of coal in shallow trays in horizontal retorts show that from 12 to 18 gallons of oil can be obtained from a ton of dry coal. In this connection the experiments of Dr. Bergius on the hydrogenation of heavy oils and tars, and on bituminous coal, has opened up considerable new possibilities in the production of liquid fuels from coal. In this way the yields of petrol, diesel oil and fuel oil from coal can be enormously increased. In fact Dr. Bergius has actually succeeded in liquefying coal and in introducing oil into the coal to combine with the coal and produce the oil.

## Preliminary Statistics of Production of Coal in Illinois in 1921

(Exclusive of product of wagon mines)

County	Loaded at Mines for Shipment (Net Tons)	Sold to Local Trade and Used by Employees (Net Tons)	Used at Mines for Steam and Heat (Net Tons)	Made into Coke at Mines (Net Tons)	Total Quantity (Net Tons)	Total Value	Average Value per Ton	Number of Employees				Average Days Worked
								Miners, Loaders, Etc. (a)	Others	Surface	Total	
Bond, Johnson and White.....	344,165	12,066	9,433	.....	365,664	\$872,000	\$2.38	293	131	52	476	160
Bureau.....	473,452	49,323	33,896	.....	556,671	2,101,000	3.78	1,226	389	162	1,777	126
Cass, Moultrie, Scott and Warren.....	148,938	13,857	12,155	.....	174,950	468,000	2.67	159	42	20	221	187
Christian.....	2,748,238	146,690	55,982	.....	2,950,910	6,305,000	3.78	1,762	892	401	3,055	152
Clinton.....	690,233	73,646	38,349	.....	802,228	2,006,000	2.50	933	309	124	1,366	98
Franklin.....	11,422,369	109,955	415,215	.....	11,947,539	36,842,000	3.08	7,873	4,358	1,689	13,920	169
Fulton.....	1,313,078	129,875	28,184	.....	1,471,137	4,247,000	2.89	2,313	771	312	3,396	107
Gallatin.....	131,804	6,538	7,276	.....	145,618	347,000	2.38	220	85	59	364	85
Greene.....	.....	6,539	.....	.....	6,959	25,000	3.59	23	.....	.....	23	108
Grundy.....	171,189	17,095	14,642	.....	202,926	826,000	4.07	314	96	44	454	193
Hancock.....	.....	6,546	.....	.....	6,546	33,000	5.04	17	2	2	21	185
Henry.....	.....	24,083	1,946	.....	26,029	102,000	3.92	63	5	7	75	185
Jackson.....	998,544	67,034	48,034	.....	1,113,612	3,295,000	2.96	944	445	173	1,562	161
Knox.....	.....	30,752	454	.....	31,206	94,000	3.01	61	6	6	73	158
La Salle.....	187,804	182,016	14,993	.....	384,813	1,585,000	4.12	828	223	140	1,191	125
Livingston.....	12,805	82,407	2,698	.....	97,910	403,000	4.12	166	37	40	243	155
Logan, McLean, Putnam, Will, and Woodford.....	553,991	143,898	53,617	.....	751,506	2,447,000	3.26	1,149	389	168	1,706	169
McDonough.....	.....	7,534	.....	.....	7,534	22,000	2.92	43	2	2	47	131
Macon.....	56,430	154,725	15,579	.....	226,734	955,000	4.21	291	115	35	441	174
Macoupin.....	5,927,455	133,781	169,717	.....	6,230,953	16,549,000	2.66	4,460	2,546	626	7,632	165
Madison.....	2,988,600	176,429	113,553	.....	3,278,582	8,606,000	2.62	2,939	1,267	417	4,623	124
Marion.....	662,675	18,621	24,438	.....	705,734	1,894,000	2.68	648	301	100	1,049	154
Marshall.....	157,396	60,405	12,106	.....	229,907	1,002,000	4.36	469	123	57	649	177
Menard.....	71,703	44,524	7,114	.....	123,341	341,000	2.76	173	43	25	241	148
Merced.....	155,356	21,470	8,516	.....	185,342	625,000	3.37	198	76	31	305	165
Merom.....	2,180,590	44,706	54,197	.....	2,279,493	6,222,000	2.73	2,220	851	298	3,369	122
Montgomery.....	934,305	151,122	16,575	.....	1,102,002	3,035,000	2.75	1,229	357	170	1,756	164
Peoria.....	2,222,319	84,270	96,882	.....	2,403,471	6,441,000	2.68	2,199	849	319	3,367	151
Randolph.....	1,709,154	60,221	40,783	.....	1,810,158	4,792,000	2.65	1,173	606	151	1,930	178
Rock Island.....	7,882	57,184	850	.....	65,916	209,000	3.17	72	22	13	107	188
St. Clair.....	4,694,093	377,864	123,645	.....	5,195,602	11,422,000	2.20	4,945	1,600	632	7,177	127
Saline.....	4,345,134	63,332	124,009	.....	4,532,475	12,738,000	2.81	4,064	1,775	705	6,544	138
Sangamon.....	5,535,060	288,711	132,984	.....	5,956,755	15,488,000	2.60	6,301	2,077	802	9,180	153
Schuyler.....	.....	7,611	.....	.....	7,611	21,000	2.76	21	.....	.....	21	151
Shelby.....	43,225	28,007	5,088	.....	76,320	238,000	3.12	106	35	14	155	124
Stark.....	.....	8,460	.....	.....	8,460	24,000	2.84	25	3	2	30	170
Tasewell.....	577,151	105,256	8,952	.....	691,359	1,906,000	2.76	674	318	90	1,082	158
Vermilion.....	2,766,752	225,006	48,407	.....	3,040,165	7,728,000	2.54	2,320	1,000	599	3,919	174
Washington.....	838,457	45,338	25,002	.....	908,797	2,953,000	3.25	519	272	65	856	248
Williamson.....	9,103,765	104,165	291,898	.....	9,499,828	25,777,000	2.71	7,033	2,625	1,370	11,028	160
Totals.....	64,174,112	3,371,482	2,057,169	.....	69,602,763	\$190,986,000	\$2.74	60,466	25,043	9,922	95,431	152

(a) Includes also shotfirers. Statistics compiled by L. Mann, U. S. Geological Survey, Sept. 30, 1922.



# Peace Prevailed to the End at Cleveland; Reorganization Committee Starts Work Nov. 14 at Chicago

## *What the Conference Did*

Enabled operators to compose many violent differences and to discover much "common ground," leaving them more nearly unified than at any time in years.

Created a "reorganization committee" of two miners (one a district president) and two operators from each of the 15 districts whose operators attended the conference, with a vague understanding that other districts can come in.

Instructed this "two-by-two" committee to suggest a method for negotiating future wage contracts. It is understood that the committee is not to report until the new United States Coal Commission does and that nobody is bound to accept its recommendations, though all parties hope to.

Instructed this committee to organize in Chicago Nov. 14 and reconvene the joint conference again to hear its report on or before Jan. 3.

Did not set up a joint fact-finding board, thus studiously leaving the field clear for the United States Coal Commission, representing the people.

Operators declined to comply with Washington's request for twenty names suggested by the conference for the new federal commission. Miners suggested 10.

Miners' scale committee, after the conference, reaffirmed the platform of wage and conditions demands formulated at the miners' convention Feb. 14-17, 1922.

"Peace to the end" was adhered to with determination in the wind-up of the joint miner-operator conference in Cleveland, Ohio, last week, as forecast in these columns. The bitterness among operators on Monday, Oct. 2, the opening day of the meeting, was smothered into the background on Tuesday, a day of give and take, and on Wednesday the partly settled program of conference decisions was put through calmly and with doors open to the public. The fighting was all over.

So the conference proceeded to set up its joint committee to work out and suggest a method for future negotiations; it agreed not to comply with the Washington request for twenty names for President Harding to consider in appointing the United States Coal Commission, and it simply "omitted" to set up any joint fact-finding commission of its own because it was the desire of the conference to do no act that would appear in the light of interference with the people's investigation of the coal industry. Since the miners wished to supply President Harding with a panel of names, they were permitted to do so after the conference adjourned. But the operators, many of whom have already submitted lists in response to requests from the administration, declined.

When the conference adjourned, about the middle of the afternoon on Wednesday, both sides agreed that no such display of harmony between miners and operators, and among operators' groups had been seen in many a year. They all declared that a new era of good feeling might easily be starting from this conference. There was some difference in tone in some of the after-conference statements, however.

### WATKINS COMMENDS LEWIS' CONCILIATION SPEECH

T. H. Watkins, president of the Pennsylvania Coal & Coke Corporation, declared that the spirit displayed by both sides had been splendid and that he had never seen such harmony prevail in a joint meeting. He said the conciliation speech of John L. Lewis, president of the miners, on Tuesday morning, was a fine declaration and went a long way toward harmonizing the whole conference. Mr. Watkins felt very optimistic for the future of relations between miners and operators.

T. K. Maher, of Ohio, who with Mr. Watkins and W. H. Haskins, of Ohio, was largely responsible for the settlement of Aug. 16 with the miners, agreed that a fine spirit pervaded the meeting and that the conference was entirely satisfactory.

"There was carried out here," said he, "not only the letter but the spirit of the Cleveland agreement. The first factor that contributed to produce harmony was the speech to the operators by Mr. Haskins, in which he made it plain that the little group which first signed the Cleveland agreement intended to stand by it here, even if they had to do so alone. The second factor was Mr. Lewis' speech and the third was Mr. Watkins' able analysis of the problems that confront us and what this conference ought to do."

In the test of strength between the "small group" of operators who broke the strike in August and the majority there

was much belligerence. Mr. Maher, of the "little group," finally was conceded the temporary chairmanship of the joint conference, but Phil Penna, of Indiana, was made chairman of the operators' separate sessions, with W. D. McKinney as secretary, and also was chosen permanent chairman of the conference.

There was difference of opinion as to whether the letter and spirit of the Cleveland agreement had been carried out. Many operators and groups who went to the conference uncommitted to take part, finally did so when it became apparent that no minority was to dictate policies as it did in the making of the Cleveland agreement and that therefore the spirit of this conference differed widely from that of the Cleveland meeting in August. They felt that the harmony of this conference was no result of bludgeoning by anybody but resulted from a realization by operators and miners alike that the only hope of doing business in the future lay in unity groups. Therefore the operators effected what chairman Penna called "a cohesion."

### COMMON SENSE, NOT THREATS, DID IT

"Common sense, not threats, and Lewis' speech were responsible for our final harmony," said H. N. Taylor, president of the Central Coal & Coke Co., of Kansas City, a man who was an outstanding figure throughout the conference, "and the outcome of it all was most satisfactory." When he was asked how permanent he felt the new harmony was, he replied: "I think it is as permanent as the harmony effected in 1898. Operators went into that meeting with such hatreds that they didn't know each other. They made peace. It lasted for twenty years or even longer."

Said Phil Penna: "The operators never can be as united as the miners for they are competitors among themselves and have far more conflicting interests than any union groups have. However a real unity was accomplished among them here."

"Both sides saw the necessity for harmonious action," commented John L. Lewis, miners' president, "and I am heartily glad that it was taken. The manner in which the business of the conference was dispatched augurs well for the future of the coal industry."

Peace at the conference was so infectious that it pervaded even the relationships between President Lewis and Frank Farrington, recalcitrant president of the Illinois miners, whose bitterness against Lewis has been obvious for a long time. Farrington received committee appointments at the hands of Lewis and the two appeared to make it a point to meet several times and converse pleasantly in public.

The joint conference was called by President Lewis and by T. K. Maher, chairman of the August Cleveland meeting, thus following out the terms of that meeting. Under the agreement which ended the strike, the two main purposes of the joint conference were to choose a joint committee to set up machinery for future wage agreements and to name a joint fact-finding commission within the industry. If the conference failed by Oct. 10 to agree upon this fact-finding commission, then President Harding was to be asked to

name it. But the Congressional authorization of a federal fact-finding commission independent of miners and operators had eliminated the necessity of the joint board and that fact appeared to be recognized by both sides soon after the conference assembled. The original program thus was whittled down to the choosing of a joint committee on machinery for future negotiation.

A new element had been introduced, however, in the form of the request from Secretary Hoover and Secretary Davis of President Harding's Cabinet for a panel of twenty names to be suggested by the joint conference, from which the President might choose men for the United States Coal Commission. There was long and loud wrangling over this, the operators holding that the conference should keep its hands entirely out of matters involving the new federal commission and the miners contending that the telegram should be answered and the names suggested.

At first the operators were determined to take the case out of the miners' hands. A committee of operators composed of Herman C. Perry, G. Webb Shillingford, J. B. Pauley, of Indiana, and John A. Donaldson drafted a telegram from operators respectfully declining to make any suggestions to the President. But it was not sent. On the last day of the conference a joint committee of eight operators and eight miners was named on motion of President Lewis to consider the matter "with relation to section 3 of the Cleveland agreement." Section 3 had provided for the creation of the joint fact-finding commission. The eight operators were H. C. Perry, of Illinois; C. W. Taylor, of western Kentucky; G. Webb Shillingford, of central Pennsylvania; Fred Lukens, of Missouri; John S. Jones, of Ohio; John A. Donaldson, of Pittsburgh; T. K. Maher, of Ohio, and M. L. Gould, of Indiana. The miners were William Green, John Brophy, P. T. Fagan, Lee Hall, John Hessler, Frank Farrington, John Wilkinson and Joseph Morris.

This committee on Wednesday reported a resolution that each side be permitted to use its own discretion about sending to Washington ten of the twenty names requested. The resolution was adopted unanimously. H. C. Perry rose to question when and where the operators should meet to formulate its answer.

"If the chair were permitted to decide that question," replied Phil Penna, presiding, "there would be no meeting at all. The less the operators, as an organized body, do with respect to that matter the better."

#### MAHER TELEGRAPHS, DECLINING TO GIVE NAMES

However, T. K. Maher sent this telegram to Secretaries Hoover and Davis:

Referring again to your wire of Sept. 29. Believing that the matter of suggesting members of the President's fact-finding commission is not a matter for the consideration of the joint convention of miners and operators the operators for themselves assume to answer your joint telegram. Our only desire is to see appointed a group of men of affairs of such established commercial and judicial reputation as to eliminate from the minds of all interested any doubt as to their findings and recommendations. We are confident that President Harding must and will name a committee of such personality and we shall give the commission our full co-operation, but prefer to leave its selection to the President without suggestion from the coal operators.

That night the miners wired a panel of ten suggested names for the federal commission but President Lewis declined to make the list public, just as various operators' officials have declined to make public the names they had previously suggested at the instance of Washington.

The creation of the joint committee on machinery for future negotiations—called the "Reorganization Committee"—took place smoothly enough at the last session of the conference, the way having been paved the day before. H. N. Taylor moved that the committee be composed of two operators and two miners from each district represented at the conference and that President Lewis and the permanent officers of the convention be ex-officio members. The permanent officers were Phil Penna, chairman; William Green, secretary of the miners' union, secretary, and A. G. Edwards, assistant secretary. Thus there would be two ex-officio members from each side. This motion was adopted unanimously.

The miners' members of this joint reorganization committee are the presidents of each district involved and one other man from each district, selected by the presidents.

Operators on the committee are: District 6, Ohio, Michael Gallagher and James H. Pritchard; Iowa, E. C. Smith and George Heaps, Jr.; Kansas, W. L. A. Johnson and Ira Clemens; West Virginia, Joseph Purselove and C. H. Jenkins; Arkansas, Oklahoma and Texas, M. McWilliams and one to be chosen; Wyoming, H. C. Marchant and one to be chosen; western Kentucky, C. W. Taylor and F. D. Rash; Michigan, R. M. Randall and Warren Pippen; Missouri, F. W. Lukens and H. N. Taylor; Indiana, Hugh Shirkie and M. L. Gould; Washington, J. H. Wallace and one to be chosen. Illinois, central Pennsylvania, Pittsburgh and Montana are yet to name their members.

On motion of President Lewis this "two-by-two" committee will have its first meeting at the Great Northern Hotel in Chicago at 11 a.m., Nov. 14.

Thus the main scheduled business of the joint conference was finished and the conference adjourned to be reconvened at the call of the "two-by-two" committee whenever that board is ready to report. It was the general understanding throughout the conference that that committee is to wait until the new United States Coal Commission produces some results before it completes its plan, for the whole feeling of the conference was that the federal investigation is to be given a clear field and that its recommendations are to be adopted as far as possible.

As Phil Penna put it: "Everybody in the coal industry has tried to put our own house in order in the past and failed. Now the people should be given a chance to do it for us."

It was also understood that whatever recommendations the "two-by-two" committee may make are not necessarily binding upon either miners or operators though everybody concerned gives evidence of hoping that the recommendations will stand. President Lewis of the miners said as a final word from his side that he "hoped" the committee would be successful in working out an acceptable plan.

### Miners Stick to 1922 Demands; Lewis Almost Sure to Be Re-elected

Immediately after the "peace conference" of miners and operators in Cleveland, which ended Wednesday afternoon, Oct. 4, the policy committee of the miners' union assembled, conversed briefly and announced that the platform of demands for wages and conditions which was adopted at the Indianapolis convention in February, 1922, had been reaffirmed. Thus whenever the time comes for the presentation of demands for the next wage agreement the miners will demand a continuance of their present wages, as well as a six-hour day, five-day week, time and a half for overtime, double time for Sundays and a correcting of machine differentials and certain other elements of the existing working agreement. While this program was adopted early this year the miners have never presented it. The reaffirming of this set of demands eliminates the necessity of another miners' convention to formulate new demands.

It became known at the end of the Cleveland conference that President Lewis' re-election as chief officer of the International United Mine Workers was assured. Nominations for the next election, which are now in, made Lewis the choice of between 1,600 and 1,700 union locals, while George Mercer, statistician in District 12, generally referred to as a "Farrington candidate" of the rebellious element in the union, won the nominating votes of only about 128 locals. The names of Lewis and Mercer are the only ones to go on the ballot for the election. While a number of locals attempted to nominate Alexander Howat, of Kansas, to run against Philip Murray, of Pittsburgh, for vice-president, it was officially stated that Howat's name would not be permitted on the ballot because he is not recognized as a member of the union, never having been reinstated after his ejection with his entire group of Kansas officers nearly two years ago. William Green is guaranteed the nomination and election to continue as secretary-treasurer.

F. R. WADLEIGH, who now is devoting most of his time to matters connected with the office of the Federal Fuel Distributor, has been looking into the anthracite situation during a visit to Pennsylvania fields.



# Fact-Finding Commission Should Seek Improvement of Coal Industry, Not Act as Tribunal

BY PAUL WOOTON

Washington Correspondent of *Coal Age*

Washington, D. C., Oct. 9.—Developments of the last week have caused officials concerned with coal to take a much less encouraging view of the situation than at any time since the strike was settled. There is a general belief that the peak of production has been reached and that a decline in output may be expected. The public believes the shopmen's strike is over. As a matter of fact it is continuing on a number of roads and some of those roads are vital in effecting the maximum coal production. Even on those railroads where the strike is settled, unusual difficulty is being experienced apparently in effecting an equitable distribution of available cars. Car supply is spotty and uncertain. The non-union districts are suffering particularly. Their cars were sent broadcast over the country during the strike and great delays in their return are occurring. Incidentally as a result of that situation, Western mines have a proportionately better car supply. The fact that the surplus of empties has been exhausted and the increasing pressure of other freight along with the difficulties in obtaining compliance with service orders and car rules and regulations make for increasing difficulties in supplying mines with coal cars.

It is clear that the more critical part of the situation is to obtain the distribution of household fuel. Every effort is being made at the office of the Federal Fuel Distributor to meet that situation. It is known that there has been no extensive substitution of anthracite. It is recognized that that situation is one in which the operator can do little. It is entirely a problem of inducing the retailer to exert his influence with the consumer to induce him to lay in a supply of bituminous coal or coke.

While the coal strikes still in progress have only a small influence on coal production, they are having serious consequences in creating a shortage of gas coal and in their influence on beehive coke production. The strike in the Greensburg-Westmoreland district is chiefly responsible for the bad situation with regard to gas coal, while the strike in the Connellsville district is so limiting the output of beehive coke that there is no surplus, which was being counted on to substitute for anthracite.

There is general disappointment that production at its apparent peak fell short of the 10,000,000-ton mark. If no better showing was made in September under certain advantages that will not exist in October or again this year there is little hope of producing enough coal to meet the full requirements of the winter. The entire September production was necessary to meet current requirements. It is believed that very little of it went into storage. If surpluses are not made available in October the dangers of the situation are increased, particularly if severe weather conditions should occur during the late autumn and early winter.

Officials generally are pleased by the developments at Cleveland. To have had another commission studying the coal situation would have been embarrassing in many ways and would have been a distinct burden on the industry. At the same time the decision to study the wage-agreement problem meets general approval, as it is regarded as certain that the government's fact-finding commission will favor bargaining within the industry rather than the setting up of a coal labor board.

As is evidenced by several provisions in the act creating the fact-finding commission, the framers of the law—for the most part lawyers—could not get away from the idea of a court. Those officials closest in touch with the coal situation hope that the commission is not going to devote too much of its time to the calling of witnesses and the taking of testimony under oath. They prefer seeing the

problem approached in a student-like manner with emphasis on the desire to give sympathetic attention to any proposal which has as its object benefit of the coal industry.

The hope also is expressed that the commission will not divide itself into two parts, one to consider anthracite and the other the bituminous situation. It is believed that the two industries should be studied together since the problems of one have their counterpart in the other. Anthracite, for instance, would be a most instructive exhibit in considering the overdevelopment of bituminous mines. There would be much gained by viewing the industries side by side, so that full advantage could be taken of their contrasts. It is also hoped that the commission will possess a sufficient aggregate of courage to recommend whatever drastic policy may seem best to meet the situation. It is being called upon to provide a constructive program for two generations to come. The thought is that few problems on the horizon are as important as that of coal. Heat is essential to life. Power is essential to industrial civilization. Each must be had in quantities sufficient to meet all requirements and must be cheap if the nation's prowess is to be maintained. There is much more before the commission than an effort to work out a plan whereby capital and labor may live in the same house without demolishing it as an incident to internecine strife.

## Spens Simplifies Order on Daily Reports

Under date of Oct. 4, 1922, Fuel Distributor Spens modified his order No. 1 calling for daily reports of coal shipments. The modifications permit the omission of names and addresses of consignees and car numbers and initials by all who will keep such a record in their offices. Instead shippers are required to note the number of carloads of coal shipped to designated classes of consignees, as "steam railroad," "public utility," etc. Shipments to tidewater and the Lakes may be so designated.

Shipments to other than consumer, as to tide, to wholesaler, or to scales, must be reported as such and the producer is to be held responsible for the ultimate reports from the middleman as to the destination of the cars.

The order follows:

### ORDER OF FEDERAL FUEL DISTRIBUTOR, OCT. 4, 1922

#### Paragraph IV

(a) To facilitate reporting and assure the earliest possible receipt by the Federal Fuel Distributor of the more essential information immediately required, compliance with that provision of clause (b) of Regulation II requiring the daily report of names and addresses of all consignees, with car numbers and initials, is hereby waived as to all producers who shall themselves keep and preserve full and detailed records showing such facts, in such form as to enable them promptly to furnish such information as to any shipment if and when required in any particular case.

All such producers, when reporting upon the form prescribed by Regulation III may at their option—

Omit any entry in the columns headed respectively:

"Consignee" and "Office Address"; and in the column "Car Nos. and Initials" state merely the number of carloads in each shipment.

The "Nature of Consignee's Business" should be designated, where applicable, as "Steam Railroad," "Public Utility," "Wholesaler," "Dealer, for Domestic Use," Industrial (such as "Iron and Steel," "Textile," etc.), and like designations.

In giving the "Destination of Shipment," state place of destination or "Tidewater" or "Lake," as the case may be.

b) In all cases where the coal is shipped from the mine to scale, to tidewater or lake ports for transshipment, or to selling agents or other representatives of the producer for sale and (or) reconignment, the producer shall make daily report of all mine shipments upon the form required by Regulation III, giving as to such coal all of the information required by such form as is

possible at time of shipment from mine; and the selling agent or other representative of the producer or person acting for his account shall also make daily reports upon the same form of all sales and consignments of coal made for the account of such producer (this latter to include all persons or agencies by whom such coal is originally sold for the account of the producer, wherever the same may be located).

In all cases such as above mentioned the producer will be held responsible for the prompt making of such reports by the sales agent, or other representative, or other person, firm or corporation through or by whom such coal is sold.

### Distribution of Lake Cargo Coal Loaded at Lake Erie Ports to Oct. 1\*

Destinations	1922		1921		1920	
	Net Tons	Per Cent	Net Tons	Per Cent	Net Tons	Per Cent
Lake Superior Ports						
Duluth Superior and Two Harbors.....	2,399,443	25.10	7,570,945	41.79	4,613,903	31.58
Ashland-Washburn.....	220,460	2.31	457,452	2.52	461,414	3.16
Copper Range (I).....	305,961	3.20	506,040	2.80	410,906	2.81
Marquette.....	113,307	1.19	115,177	.63	197,337	1.36
Ft. William, Pt. Arthur and Jackfish.....	514,728	5.39	1,686,795	9.31	1,170,309	8.00
Other Lake Superior Pts.....			37,750	.21	25,671	.17
Totals.....	3,553,899	37.19	10,374,159	57.26	6,879,540	47.08
Lake Michigan Ports						
Milwaukee-Racine.....	1,458,600	15.27	2,213,099	12.21	1,682,764	11.51
So. Chicago, Ind. Harbor & Gary.....	961,906	10.07	907,100	5.01	814,957	5.58
Sheboygan to Escanaba (2).....	693,915	7.26	1,314,203	7.26	983,307	6.72
Other Lake Mich. Pts.....	76,952	.80	189,798	1.04	131,423	.90
Totals.....	3,191,373	33.40	4,624,200	25.52	3,612,451	24.71
St. Mary's River Pts.						
Detour & Lime Island.....	436,201	4.56	186,918	1.03	307,795	2.10
Sault Ste. Marie, Can.....	90,394	.95	601,092	3.32	869,282	5.94
Sault Ste. Marie, Am.....	56,599	.59	78,146	.43	116,052	.80
Totals.....	583,194	6.10	866,156	4.78	1,293,129	8.84
Lake Huron Ports.....	123,239	1.29	132,736	.73	152,801	1.05
Detroit & St. Clair River Ports.....	649,438	6.79	731,694	4.04	933,043	6.39
Lake Erie Ports						
Buffalo-Fairport & Toledo.....	948,139	9.92	47,018	.26	25,586	.17
Other Pts. (Regular).....	98,271	1.03	70,738	.39	11,907	.09
Totals.....	1,046,410	10.95	117,756	.65	37,493	.26
Georgian Bay Ports						
Welland Canal, Lake Ont. & St. Lawrence River Pts.....	281,083	2.94	681,304	3.77	615,816	4.21
Totals.....	128,866	1.34	588,713	3.25	1,090,120	7.46
Grand totals.....	9,557,502	100.00	18,116,718	100.00	14,614,393	100.00

\* Compiled by Ore & Coal Exchange, Cleveland, H. M. Griggs, mgr.

(1) Hancock, Houghton, Hubbell, Lake Linden, Portage and Porch Lake.  
(2) Escanaba, Green Bay, Marinette, Menominee, Manitowoc and Sheboygan.

### Pennsylvania Fuel Commission Names Fair Practice Committee

The Fair Practice Committee of the Pennsylvania Fuel Commission, which is now considering the claims of operators in Philadelphia, has been announced by W. D. B. Ainey, chairman of the commission. The personnel of the committee is as follows:

Edgar C. Felton (chairman) Philadelphia, member of the commission; Hugh A. Dawson, Scranton, member of the commission; Franklin Spencer Edmonds, Philadelphia; John Gribbel, Philadelphia; Nathan Hayward, Philadelphia; Francis A. Lewis, Philadelphia; Hood McKay, Philadelphia, and Howard W. White, Philadelphia.

The federal representative appointed by the Federal Fuel Administration at Washington is E. M. Durham, of Virginia.

### Pennsylvania's Estimated Coal Reserve Cut Almost in Half; Enough for 290 Years

According to a survey of the bituminous coal fields of Pennsylvania, just completed by the bureau of topographic and geological survey of the state department of internal affairs, there are 43,830,860,000 net tons of recoverable coal in the state. At the present rate of consumption this supply will last 290 years. The department has announced that prior to this survey it had generally been believed the bituminous fields held at least 75,000,000,000 tons of recoverable coal.

The report says: "The original bituminous coal deposits in Pennsylvania reached a total of 75,259,055,000 tons and thus far only 5,519,665,000 tons have been mined out. Waste and unrecoverable coal leaves a total of 43,830,860,000 tons which can be mined out and used.

"The largest original deposits were found in Washington and Greene counties. Washington originally held 10,526,023,000 tons and Greene 10,330,094,000 tons. Thus far only 42,490,000 tons have been mined in Greene and 557,763,000 tons have been mined in Washington County. The largest supply still recoverable is in Greene County where it is estimated that 7,011,400,000 tons of mineable coal still remain, a supply approximately 40 per cent more than the total mined in the entire bituminous coal field up to the present time.

"Westmoreland County thus far has furnished more coal than any of the other counties, a total of 1,218,141,000 tons having been mined to date. Allegheny County stands second with 969,200,000 tons and Fayette ranks third with 899,544,000 tons.

"The summary of the coal reserves was worked out from detailed county reports in which the area, thickness and quantity of coal in each bed was computed by townships. The work was done by Major John F. Reese, mining engineer, who has had wide experience in the bituminous coal fields of Pennsylvania."

#### BITUMINOUS COAL DEPOSITS IN PENNSYLVANIA (In Thousands of Net Tons)

County	Original Deposit	Mined Out	Recoverable
Allegheny.....	3,180,400	969,200	1,486,900
Armstrong.....	3,750,700	107,290	2,491,100
Beaver.....	1,116,400	1,400	560,000
Blair.....	61,900	11,900	25,000
Bradford.....	39,000	300	19,000
Butler.....	4,550,000	30,000	2,300,000
Cambria.....	5,383,000	466,900	3,638,080
Cameron.....	42,000	100	20,000
Centre.....	422,000	60,000	184,000
Clarion.....	1,817,000	37,000	1,059,000
Clearfield.....	3,992,000	308,210	2,165,400
Clinton.....	93,000	5,000	44,000
Elk.....	610,000	27,000	297,000
Fayette.....	5,229,734	899,544	2,604,400
Greene.....	10,330,094	42,490	7,011,400
Indiana.....	6,339,400	299,200	4,288,700
Jefferson.....	3,420,000	180,000	1,900,000
Lawrence.....	611,000	300	311,000
Lycoming.....	68,000	200	34,000
Mercer.....	368,000	40,000	172,000
McKean.....	320,700	300	136,000
Somerset.....	6,091,800	187,384	3,986,900
Tioga.....	124,400	23,200	52,000
Washington.....	10,526,023	557,763	5,481,680
Westmoreland.....	6,381,504	1,218,141	3,297,500
Broad Top Field.....	391,000	46,843	265,800
Total.....	75,259,055	5,519,665	43,830,860

### Lake Coal Loadings During Season to End of September\*

Ports	Railroads	(In Net Tons)								
		Cargo	Fuel	Total	Cargo	Fuel	Total	Cargo	Fuel	Total
Toledo.....	Hooking Valley.....	2,338,742	65,804	2,404,546	3,392,526	90,626	3,483,152	2,533,666	51,508	2,585,174
	Toledo & Ohio Central.....	363,417	10,194	373,611	912,039	25,463	937,502	1,155,803	44,646	1,200,449
	Baltimore & Ohio.....	2,110,904	54,083	2,164,987	2,019,800	59,071	2,078,871	933,093	28,423	951,516
Sandusky.....	Pennsylvania.....	1,689,727	64,397	1,754,124	1,221,981	35,303	1,257,284	1,066,276	15,015	1,081,291
	Wheeling & Lake Erie.....	162,483	7,958	170,441	1,418,326	40,134	1,458,460	1,376,311	73,418	1,449,729
Huron.....	Baltimore & Ohio.....	576,243	42,223	618,466	2,176,645	87,837	2,264,482	2,163,365	152,418	2,315,783
Lorain.....	Pennsylvania.....	383,651	64,285	447,936	1,768,313	73,258	1,841,571	752,653	115,558	868,111
Cleveland.....	Erie.....	106,874	4,295	111,169	355,964	12,071	368,035	243,997	14,116	258,113
Fairport.....	Baltimore & Ohio.....									
Ashtabula.....	New York Central.....	615,853	45,361	661,214	959,835	52,381	1,012,216	988,367	196,637	1,185,004
Conneaut.....	Pennsylvania.....	583,253	56,028	639,281	1,922,167	63,910	1,986,077	1,210,112	70,349	1,280,461
Erie.....	Bessemer & Lake Erie.....	544,240	26,333	570,573	1,090,156	14,732	1,104,888	1,797,497	30,624	1,828,121
	Pennsylvania.....	82,115	49,849	131,964	910,484	51,829	962,313	383,253	72,171	455,424
Totals.....		9,557,502	490,810	10,048,312	18,148,236	606,615	18,754,851	14,604,393	864,783	15,469,176

\* Compiled by Ore & Coal Exchange, Cleveland, Ohio; H. M. Griggs, manager.



## Morrow and Callahan Resign as Officials of National Coal Association; to Form Selling Company

J. D. A. Morrow, vice-president of the National Coal Association, and John Callahan, its traffic manager, have resigned from these offices and will establish the Morrow-Callahan Coal Co., which will act as a selling agent for a few well-known coal producers who will be associated with the firm.

While it is believed that these officials of the National Association would have taken this step sooner or later, regardless of the situation within the National Coal Association, there is reason to think that they were influenced to embark in business for themselves at this time by the lack of support being given that organization.

At the present time the National Coal Association represents less than 50 per cent of the country's bituminous production. Mr. Morrow frequently has urged upon bituminous operators the necessity of having within the organization the maximum possible amount of the country's production. It always has been recognized as impossible to have 100 per cent of the production represented in any organization of operators. This is due to the fact that many mines are owned and worked by manufacturing concerns or other consumers as a mere incident of their business. Such operators of coal mines as public utilities or steel makers, for instance, are not immediately concerned with the welfare of other producers of coal. In many instances they are particularly anxious not to align themselves with the operators whose principal business is the production of coal. Nevertheless there is at least 75 per cent of the country's production which reasonably might be expected to join in a national association.

One of the outstanding results of the study of trade associations which has been made since the Supreme Court's ruling in the *Hardwood* case is that industry must have a practical point of contact with the federal government. Coal is too essential to the public welfare for the government to have to turn to several thousand individuals in an effort to secure information. It is admitted almost unanimously that there must be someone in Washington authorized to represent the bituminous industry. Such a representative must be supported by a staff.

### UNWILLING TO OCCUPY FALSE POSITION

Mr. Morrow is believed to have felt that the association is such an obvious necessity that it should have the unanimous support of no less than 75 per cent of the country's bituminous production. When it became apparent that this measure of support could not be obtained, Mr. Morrow is thought to have been unwilling to pose as the representative of the industry when as a matter of fact he was representing only the minority portion of production.

While it is admitted that Mr. Morrow's resignation has precipitated something of a crisis in the affairs of the National Coal Association there is every indication that the organization will continue. It is known that certain coal operators are so convinced of the need of the association that they would be willing to finance it themselves in order to keep it in existence. It is certain that there never has been a time in the history of the coal industry at which so great a need for the organization exists as at present. What the government has done in the way of regulating distribution and in the creation of a commission, which within a year will recommend legislation and other action of great moment to the industry, well may be the entering wedge for drastic federal regulation unless there is evidence that the coal industry is competent to work out its own salvation. With the industry confronting such a situation it is apparent that a point of contact with the federal government will continue to be maintained. It is fully expected that the resignation of Messrs. Morrow and Callahan will emphasize the need for a wider measure of support for the association.

Mr. Morrow first came to the attention of the coal industry in a national way when he wrote the report on coal

for the Bureau of the Census, based on the returns of the 1909 census. He was on the point of leaving Washington after the completion of that job when E. N. Hurley was made chairman of the Federal Trade Commission. Mr. Morrow had formerly worked with Mr. Hurley and at his earnest request Mr. Morrow consented to remain to serve as personal assistant to conduct the initial research, which resulted later in the Webb-Pomerene Act, making legal combinations for purposes of export trade. By the time the export investigation was out of the way the coal situation had come in for serious attention, with the result that Mr. Morrow stayed with the commission to make a study of the bituminous-coal industry.

### ORGANIZED PITTSBURGH PRODUCERS' ASSOCIATION

Mr. Morrow left the Federal Trade Commission to organize the Pittsburgh Coal Producers' Association. In 1917 he was called to Washington to organize the National Coal Association. In January, 1918, he accepted an invitation from Fuel Administrator Garfield to reorganize the distribution division of that organization. He continued as head of that division until it was dissolved, when he resumed his position with the National Coal Association.

Mr. Callahan began his career in the train service of the Pennsylvania R.R. Promotions carried him into the traffic end of the work, where he specialized in the problems of coal transportation. His activities as traffic manager for the National Coal Association have brought him into the front rank of the country's traffic specialists.

## Governor Davis Signs Order Fixing Coal Prices in Ohio at \$3.56-\$4.86 at Mine

A schedule of fair prices for coal mined in Ohio and sold to Ohio consumers has been formally approved by Governor Harry L. Davis following a week's investigation of the question by State Fuel Administrator Clarence J. Neal. The prices as announced by the administrator are based on those established by the Federal Fuel Administration in 1918. The new price list is to become effective Oct. 10.

The prices as fixed are for mine-run and provisions are made for a charge of 25c. per ton more for lump and 25c. per ton less for screenings and slack. Administrator Neal reports that the price list is to be considered only temporary and will be maintained until a study of the cost of producing and distributing coal now under way is completed, when it is purposed to issue a revised price list. Dealers' and jobbers' prices are likewise to be announced as soon as the necessary information has been compiled. The price list as announced follows:

District No. 1—Meigs County and Cheshire and Addison townships, Gallia County, \$4.06.

District No. 2—Vinton Jackson, Lawrence, Scioto, Pike and all of Gallia County, except Cheshire and Addison townships, \$4.86.

District No. 3—Hocking and Athens counties; Coal and Monroe townships, in Perry County, and Homer township, Morgan County, \$3.75; Bailey Run or No. 7 seam coal, \$4.34.

District No. 4—Washington and Noble counties, Morgan County except Homer township and Perry County except Coal and Monroe townships, \$4.24.

District No. 5—Muskingum County \$3.93.

District No. 6—Holmes, Tuscarawas, Carroll and Coshocton counties; Monroe, Franklin, Washington and Freeport townships in Harrison County; Washington and Yellow Creek townships, Columbiana County, and Brush Creek, Saline, Springfield, Ross and Knox townships, Jefferson County, and operations in the 8A vein in Flushing and Union townships, Belmont County, \$4.24.

District No. 7—Trumbull, Portage, Summit, Mahoning and Yellow Creek townships, \$4.86.

District No. 8—Monroe County, Belmont County except Warren township and operations in the 8A vein in Flushing and Union townships; Washington and Freeport townships, and Jefferson county except Brush Creek, Saline, Ross, Knox and Springfield townships, \$3.56.

District No. 9—Guernsey County and Warren township in Belmont County, \$3.75.

Special prices for coal mined by the Wayne Mining Co., \$4.31.

## Maryland Householders Balk at Price of Bituminous Coal for Domestic Use

In a communication from the Maryland Fuel Distribution Committee, offering the fullest co-operation to Federal Fuel Distributor Spens, the statement is made that no really acute emergency, so far as soft coal is concerned, exists in that state. The largest users of bituminous coal are said to be able to obtain practically sufficient supplies for their present needs. Dealers are said to be complaining, however, regarding high prices charged at mines for low-volatile bituminous suitable for domestic purposes. The claim is made that these prices are such that, even if slight margins are charged for handling and profit, the price to the consumer makes bituminous coal unattractive for household use. Because of this situation, the committee is experiencing difficulty in persuading Maryland householders to purchase early winter supplies of soft coal to make up for an expected shortage of anthracite during the next two months.

Governor John M. Parker, of Louisiana, states that no acute coal shortage exists in that state, due largely to the extensive use of fuel oil by industrial interests. Conservation measures are, however, being put into effect.

## State Fuel Administrator Deprecates Move To Enact Coal Legislation in Michigan

Charles F. Dunn, Fuel Administrator for Wayne County, maintains there is no necessity for calling a special session of the Michigan Legislature to regulate prices and distribution of coal in Michigan.

Governor A. J. Groesbeck issued the call Oct. 2, saying that his action was influenced by information from the Federal Fuel Administration that it would be unable to control coal distribution after shipments leave the mines. Governor Groesbeck believes present conditions indicate a serious coal shortage during the winter and he wants to prevent extortionate prices.

The Detroit Coal Exchange supports the position of Mr. Dunn. One of its officers says Detroit dealers have done no profiteering thus far and would not seek to impose unfair prices on the public. Mr. Dunn, himself a dealer, expresses the hope that he and other dealers will be afforded a hearing before the Legislature or the committee that may be designated to draft the proposed legislation.

## Willard Makes Suggestions to Railroads To Speed Up Distribution of Coal

At a conference held with Mr. Spens in Washington on Oct. 5 concrete recommendations for accelerating the distribution of coal throughout the country were unanimously decided upon by the advisory committee on transportation recently appointed by Federal Fuel Distributor C. E. Spens. In a letter to the executive heads of all the railroads, Chairman Willard gives a series of concrete suggestions which cover prompt unloading, discontinuance as far as possible of all maintenance and construction work requiring use of power and cars, use of all available forces to check yards and stations for delayed cars with a view to effecting not only prompt unloading but prompt movement; a vigorous campaign to reduce to the minimum bad-order locomotives and cars; prompt return of foreign coal cars to owners, and advice to coal operators that available coal equipment can be increased by the avoidance of sales that require abnormally long distance movement.

## Lake Strike Does Not Halt Flow of Coal

The second week of the strike of sailors employed on the Great Lakes by the Laker Carriers' Association opened with practically all vessels still on the move, though the flow of coal over Lake Erie docks was not as heavy as in the previous week. Officials of the sailors' union protested to Secretary Hoover that vessels were leaving port undermanned and that deputy customs collectors refused their

request for a muster of the crews of all outbound boats. The customs officers based their refusal on the law which requires the filing of affidavits bearing specific charges against a ship at least six hours before sailing time. They threatened to invoke against the union that clause of the seamen's act which provides a fine of \$500 as penalty for the filing of a false affidavit. Ships were cleared in all cases where captains believed their boats to be sufficiently manned.

## Locals of District 26 Protest Against New Wage Agreement

Phalen local of the United Mine Workers has formally protested at the wage agreement between the U.M.W. for District 26 (New Brunswick, Nova Scotia and Prince Edward Island) and the soft-coal operators, principally the Dominion Coal Co. (British Empire Steel Corporation). This local was instrumental in starting the recent strike which ended in the agreement following the defeat for re-election of the old board of officers including Robert Baxter, president of the district, and Silby Barrett, for twelve years the international board member for the district. The Springhill local also is in the field against the agreement.

The United Mine Workers for District 26 are leading in an attempt to found a labor college. If the college is opened it probably will be built in either Glace Bay or Sydney. The officials of the district assert that such a college is a necessity. The labor college, say the union chiefs, would preserve democracy and instruct in coal mining and other occupations.

DUE TO THE LARGE VOLUME of shipments by river, output of coal and coke in the Connellsville coke region is increasing in spite of the car shortage. All operating mines are increasing in man power and output. A couple of union mines on the river nearby in Washington County struck Oct. 4—the Diamond mine of the Diamond Coal & Coke Co., because the men were ordered to load cars of the Mather Collieries Co., an open-shop operation, and the Lily mine of the Lily Coal & Coke Co., because they were asked to load barges for the Pittsburgh Steel Co., which operates open-shop mines. The miners tried also to get the Pike mine of the Diamond Coal & Coke Co. out, but failed, and the Diamond mine returned to work Oct. 5.

LOUIS D. TRACY, OF EDGEWOOD, PA., has been appointed superintendent of the central experiment station of the Bureau of Mines at Urbana, Ill. Mr. Tracy was educated at the Sheffield Scientific School and at Yale University. He holds degrees as both mining and civil engineer. He joined the staff of the Bureau of Mines on July 15, 1918. Since that date he has served the bureau continuously as a coal-mining engineer. Mr. Tracy takes the position made vacant by the recent resignation of J. J. Rutledge, who now is chief mining engineer of the Maryland Geological Survey. J. L. Lamson has been transferred from the Geological Survey's New England district to the New York district, with headquarters at Albany. Harry I. Granger was at the same time transferred from Albany to Boston.

REPORTS REACHING WASHINGTON are to the effect that difficulties are being encountered in the burning of the British coal now being imported. The importers contend that this is due to lack of familiarity with the coal, but those who have purchased some of the British coal maintain that poor quality coal has been shipped to America. One of the British cargoes, 7,000 tons, was shipped to Norfolk, which is cited as the latest instance of carrying coals to Newcastle. As this is written, no determination has been reached as to what to do with the shipment.

VERY FEW PERMITS are being issued under Service Order 25. Outside of the Lake movement, only seven permits have been allowed. These cover less than 400 cars. Even these permits are limited to a comparatively small movement.



## Mining Congress in Cleveland Is Laying Down National Program for Entire Mining Industry

The American Mining Congress, in session this week at Cleveland, is discussing problems vital to all branches of mining and its affiliated industries with the purpose of laying down a national or even international program for the coming year. The first general aim of the congress is to arouse a protest against "any further encroachment of governmental fraternalism in supervising and restricting individual enterprise in the development of mining." The second is to inaugurate a national policy of industrial co-operation which will help to solve the problem of relations between capital and labor and further eliminate needless waste caused by industrial strife. The third is to advance the cause of standardization in methods, processes and equipment.

The congress opened Monday evening in Cleveland's magnificent Public Auditorium with much formality, including an address by Newton D. Baker, Secretary of War in the Wilson administration and now president of the Cleveland Chamber of Commerce. Tuesday's program provided for a discussion of mining conditions throughout the country. Wednesday morning was devoted to coal. Thursday was to be national standardization day with parallel sessions on industrial co-operation. On Friday, the 13th, metal mining problems are to be foremost. The "silver anniversary banquet" of the congress Friday night is to be the final event of the convention.

All through the convention the program was shaped to eliminate "spread eagles" and hold every session down

to essential facts and matters of real importance to mining. As the convention opened it was predicted that more than 3,000 men who face mining's daily problems would attend and not an hour was to be wasted.

In all its 25 years the congress never met in more beautiful surroundings than in the new auditorium. The main arena or ground floor of the great building provides a floor 247 feet long and 120 feet wide without a post or obstruction of any kind and is illuminated largely through an 80-foot ceiling made mostly of glass. The permanent decorations are in a soft shade of gray with blue in the balcony trim and highlighted in gold. The same colors prevail in Machinery Hall, which is directly below and reached by a winding staircase and several ramps of easy grade.

The exhibits of machinery and equipment are shown artistically in this building. There are about 200 displays of one sort or another, including a demonstration by the Bureau of Mines of new breathing apparatus and other approved appliances, a working model of a Hudson Coal Co. anthracite mine and coal-preparation plant, a state exhibit by Colorado, a small display by the Mexican government and row after row of booths showing the most modern types of mine equipment.

Highlights in the entertainment of the week were the smoker and carnival of Wednesday night, daily organ recitals throughout the convention and much singing by the famous "anthracite sextet" which so often has entertained visitors underground in the Pennsylvania hard-coal region.

### Union May Abandon District 29 Because of Partiality of Miners to Open Shop

Abandonment by the United Mine Workers of District 29, which covers the New River field and a small part of the Winding Gulf field, understood to be contemplated by the union organization, is regarded as the logical sequence to developments within the district during the last two years. The proposed relinquishment is due to the fact that there are now so few union miners in the district that a district organization can no longer be supported financially. If District 29 loses its identity as such, it will either be combined with District 17, of which C. F. Keeney is president, or the territory will be looked after by the International organization. The territory in District 29 is now an open-shop territory. By a contract between the operators and miners which became effective Sept. 1, 1920, it became closed-shop territory.

That it has not remained such is due to two factors. In the first place the check-off has never been popular among the miners. That was demonstrated by the opposition to that feature of the Sept. 1, 1919, contract when it was submitted to the miners in a referendum. It was freely stated at the time that a majority of the miners had voted against ratification but that the votes were counted for ratification. The other factor which has led New River operators to adopt the open-shop plan is the frequent strikes and lawlessness displayed by an element among the miners.

When the 1919 contract was agreed to by most of the operators President William McKell and other operators representing about one-tenth of the tonnage of the field refused to become a party thereto and continued to operate on the open-shop plan. Some of the more radical union miners in the district sought to prevent such operation by attacks on McKell plants and did succeed in closing down the Willis Branch Coal Co.'s mine after almost two years of violence. A number of union miners were tried and convicted for such violence and are serving terms in the penitentiary.

No sooner had the operators of the New River field

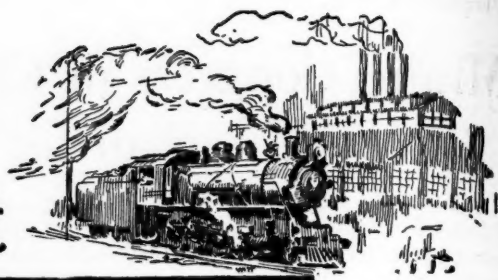
signed the new contract than the men went out on strike on Nov. 1, two months after the new contract became effective. The miners themselves started the move for open-shop operations, early in 1921 asking the operators to resume on a wage scale lower than that of the union. Many of the miners at that time returned to work without any union agreement. Although some of them responded to the strike call of April 1, 1922, mines in the New River field continued at work throughout the strike under the protection of a federal injunction. When an agreement was reached elsewhere by the union no move was made to force the New River field operators to sign an agreement, simply because no sentiment existed among the miners and because they were receiving wages as high as those paid union men without having any agreement or without having to pay money to the union through the check-off.

SEVERAL IGNITIONS OF MINE GAS which might have led to explosions and at least one mine fire attributed to heated leg wires of electric detonators have occurred at mines in which outside shotfiring is practiced. Photographs taken at one mine indicated that the wires became red hot during firing. These results having been called to the attention of the electrical section of the U. S. Bureau of Mines, a series of tests were made at the Pittsburgh (Pa.) experiment station to determine, if possible, the cause of the ignitions and to aid in preventing future trouble of this kind. The investigation, which is considered preliminary, included tests to determine the conditions that cause gas ignitions from heated leg wires of electric detonators, possible remedies for such heating, and the relative behavior of iron and of copper leg wires. Details of these tests are given in Serial 2383, "Ignition of Gas by Electric Detonators," which may be obtained from the Bureau of Mines, Washington.

H. F. BELL, FOREIGN FREIGHT TRAFFIC MANAGER for the Erie Railroad Co., has been given a leave of absence at the request of Fuel Distributor Spens to assist his organization during the existing emergency. Mr. Bell was associated with Mr. Spens in his work for the Railroad Administration and also was one of the traffic staff of the War Industries Board during the war.



# Production and the Market



## Weekly Review

Buyers are in a concerted movement to stay out of the market until prices come down. Industrial coal is being sold on a hand-to-mouth basis, for immediate requirements only. Industries throughout the country have responded to the suggestion that business buy coal according to its current needs during the present emergency and the practice is now general.

The effect of the curtailed demand is read in the last two weeks' decline in spot prices of bituminous coal, as shown by *Coal Age*, Index, which stands at 380 on Oct. 9, representing an average spot price at the mine of \$4.60. This is a drop of 29c. as compared with the previous week and 46c. below the average price of \$5.06 on Sept. 25.

Poor transportation conditions and the growing car shortage tend to modify the price break. Were it not for these factors the present market would range lower all around until the so-called buyers' strike had produced the price level which would tempt the consumer to enter heavier orders.

### IMPORTANT TO END INDUSTRIAL BUYERS' STRIKE

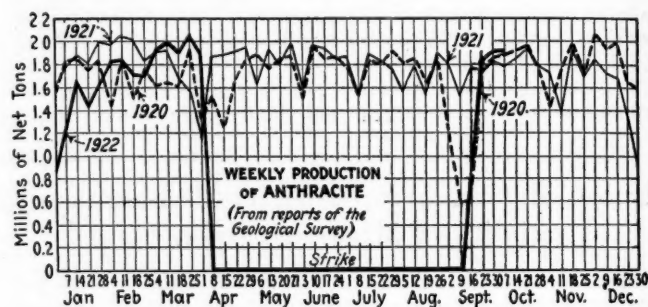
The coal industry has a very definite deficit to overcome before reserve stocks can be brought up to anything like normal. Right now current requirements are absorbing current production, but the approach of coal-burning weather with its attendant transportation difficulties always spells increased demand. If industries call off their buyers' strike and if the railroads give the preference to coal movement that the occasion demands this situation can be met without a reversion to the boom market of two years ago.

Warm weather has reduced the call for domestic coal. Dealers are now having trouble in moving supplies and are inclined to reduce their orders to the mines. Too many people are waiting for household coal to follow steam sizes down in price. The result is producers are

feeling the pressure for a reduction on domestic mine prices.

New England is in the heaviest supply of any section of the country and the Northwest, of course, is the shortest. In the former market both all-rail and waterborne fuel is selling off and receipts are dropping. Lake business is very heavy, but the tremendous dock receipts of the past few weeks have so completely dispelled fears of a fuel famine that it has reduced consumer demand and threatens to affect the placing of additional orders at the mines.

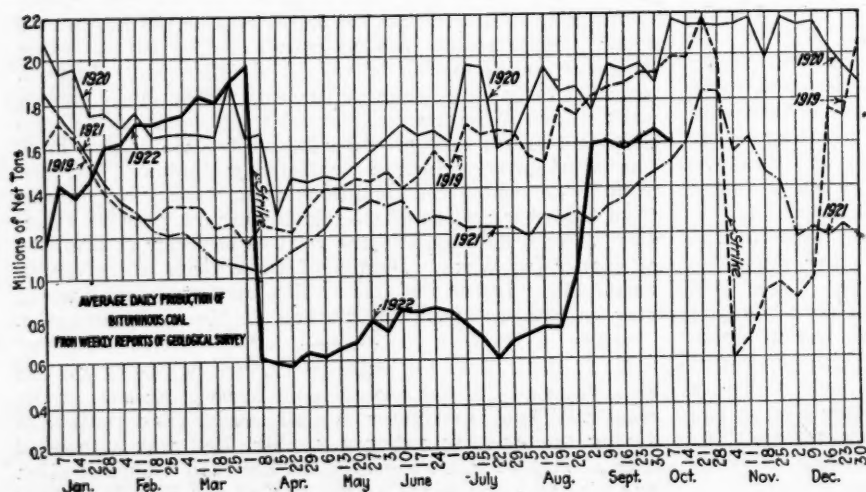
The second week of the strike of sailors employed on the Great Lakes shows practically all vessels still



on the move, although dumpings at the lower ports declined in the last week. The sailor's union has protested to Secretary Hoover that vessels were leaving port undermanned.

Breaks in the price of steam sizes of anthracite are reported from several of the larger markets. This is due to oversupply and large producers are running this coal to mine storage. Warm October weather together with the great quantity of soft coal flooding the market has been responsible for a remarkable shrinkage in orders for the smaller coals.

Demand for the larger sizes of hard coal is, of course,



### Estimates of Production

(Net Tons)

#### BITUMINOUS

	1921	1922
Sept. 16 (b) .....	8,187,000	9,737,000
Sept. 23 (b) .....	8,527,000	9,744,000
Sept. 30 (a) .....	8,890,000	9,776,000
Daily average .....	1,482,000	1,629,000
Calendar year .....	295,440,000	270,967,000
Daily av. cal. yr. ....	1,285,000	1,174,000

#### ANTHRACITE

Sept. 16 .....	1,749,000	1,107,000
Sept. 23 (b) .....	1,725,000	1,863,000
Sept. 30 (a) .....	1,802,000	1,947,000
Calendar year .....	69,302,000	27,178,000

#### COKE

Sept. 23 (b) .....	70,000	137,000
Sept. 30 (a) .....	79,000	162,000
Calendar year .....	4,113,000	4,789,000

(a) Subject to revision. (b) Revised from last report.



rushing. This market, however, has been affected by the unseasonably warm weather and the inevitable rush to cover has been delayed at a time when dealers welcome every day's respite to enable them to get in more adequate supplies. Mines are handicapped by car shortage and rail delivery is very slow.

### BITUMINOUS

"A slight decrease marked production of soft coal during the first week of October," says the Geological Survey. "For three weeks in succession the output had been slowly increasing, reaching 9,776,000 net tons in the week of Sept. 30. During last week (Oct. 2-7) the returns so far received indicate a total of about 9,600,000 tons.

"Although the aggregate shipments of soft coal have increased gradually during September, the shipments from individual producing districts have fluctuated irregularly. In Pennsylvania there was a slight decrease each week since Sept. 9, and last week was begun with shipments at a lower rate than the previous week. In Maryland and part of northern West Virginia there has been a steady increase, but in southern West Virginia there has been a steady decline. In Kentucky there had been little or no change up to last week, for which, however, a decline is indicated. In Alabama daily shipments have been falling off since the close of the first week of September. In Ohio, Indiana and Illinois there have been gradual gains, which now

appear to be checked. West of the Mississippi shipments have in the main steadily increased."

New England is the target for heavy tonnage. Western congestion is diverting much coal eastward, forcing it on an unwilling market, with softening quotations. All-rail shippers are pushing sales in an attempt to keep up their production. During the week ended Sept. 30 there were 3,541 cars of soft coal forwarded through the Hudson gateways, as compared with 3,255 in the preceding week.

### NEW ENGLAND COAL RECEIPTS

(In Thousands of Net Tons) a

	Anthracite			Bituminous			Aggregate
	Tide	Rail	Total	Tide	Rail	Total	
January.....	114	361	475	805	532	1,337	1,812
February.....	206	551	757	1,081	753	1,834	2,591
March.....	337	757	1,094	1,407	879	2,286	3,380
April.....	201	277	478	936	322	1,258	1,736
May.....	42	135	177	880	146	1,026	1,203
June.....	34	111	145	812	117	929	1,074
July.....	48	85	133	831	112	943	1,076
August.....	43	43	86	1,061	209	1,270	1,356
Total.....	1,025	2,320	3,345	7,733	3,072	10,805	14,150

a Figures furnished by courtesy of the Massachusetts Fuel Administrator.

b Subject to revision.

Westbound coal movement through the "Soo" during September was 2,364,550 net tons. Of this amount only 10,805 tons was hard coal.

Hampton Roads is in oversupply for the same reason and pier tonnage is increasing. Dumpings during the week ended Oct. 5 were 262,945 net tons as compared with 285,635

### Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	Sept. 11 1922	Sept. 25 1922	Oct. 2 1922	Oct. 9 1922†		Market Quoted	Sept. 11 1922	Sept. 25 1922	Oct. 2 1922	Oct. 9 1922†
Smokeless lump.....	Columbus...	\$6.40	\$6.65	\$6.75	\$6.50@7.00	Pitts. No. 8 mine run.....	Cleveland....	\$5.10	\$4.60	\$4.40	\$4.25@4.50
Smokeless mine run.....	Columbus...	5.75	6.00	5.75	5.50@6.00	Pitts. No. 8 screenings.....	Cleveland....	5.10	4.35	4.10	4.00@4.10
Smokeless screenings.....	Columbus...	5.65	5.75	5.75	5.25@6.00	<b>Midwest</b>					
Smokeless lump.....	Chicago...	6.10	6.50	6.35	5.00@7.50	Franklin, Ill. lump.....	Chicago....	5.40	5.40	5.40	5.25@5.50
Smokeless mine run.....	Chicago...	6.00	5.85	5.85	4.75@6.50	Franklin, Ill. mine run.....	Chicago....	4.75	4.75	4.75	4.25@4.75
Smokeless lump.....	Cincinnati...	7.00	6.30	6.30	5.15@7.50	Franklin, Ill. screenings.....	Chicago....	4.90	4.10	3.85	3.00@3.00
Smokeless mine run.....	Cincinnati...	5.50	5.70	5.70	4.90@7.00	Central, Ill. lump.....	Chicago....	4.95	5.10	5.10	5.00@5.25
Smokeless screenings.....	Cincinnati...	5.50	5.30	5.30	4.60@7.00	Central, Ill. mine run.....	Chicago....	4.50	4.55	4.55	3.85@4.00
*Smokeless mine run.....	Boston.....	8.35	8.05	8.05	7.00@7.50	Central, Ill. screenings.....	Chicago....	4.30	3.35	3.35	2.50@3.25
Clearfield mine run.....	Boston.....	5.00	4.50	4.50	4.00@4.50	Ind. 4th Vein lump.....	Chicago....	5.25	5.25	5.25	6.00@6.85
Cambria mine run.....	Boston.....	5.50	5.00	4.75	4.25@4.75	Ind. 4th Vein mine run.....	Chicago....	4.85	4.85	4.85	4.50@4.75
Somerset mine run.....	Boston.....	5.10	4.75	4.60	4.00@4.60	Ind. 4th Vein screenings.....	Chicago....	4.60	3.85	3.85	3.65@4.00
Pool 1 (Navy Standard).....	New York....	5.75	5.50	5.50	4.75@5.75	Ind. 5th Vein lump.....	Chicago....	5.10	5.10	5.10	5.00@5.25
Pool 1 (Navy Standard).....	Baltimore...	5.90	5.75	5.75	5.00@6.00	Ind. 5th Vein mine run.....	Chicago....	4.65	4.65	4.65	4.00@4.75
Pool 9 (Super.Low Vol.).....	New York....	5.25	5.00	4.85	4.35@5.00	Ind. 5th Vein screenings.....	Chicago....	4.40	3.85	3.60	3.25@3.50
Pool 9 (Super.Low Vol.).....	Philadelphia..	5.60	5.35	4.60	4.00@4.75	Standard lump.....	St. Louis....	4.65	4.90	4.75	3.50@3.60
Pool 9 (Super.Low Vol.).....	Baltimore...	6.10	5.50	5.10	4.75@5.00	Standard mine run.....	St. Louis....	2.85	3.90	3.75	3.25@3.60
Pool 10 (H.Gr.Low Vol.).....	New York....	4.80	4.65	4.65	4.00@4.25	Standard screenings.....	St. Louis....	3.35	2.50	2.35	2.00@2.25
Pool 10 (H.Gr.Low Vol.).....	Philadelphia..	5.30	5.10	4.25	3.75@4.00	West Ky. lump.....	Louisville...	4.75	4.90	5.50	6.00@6.50
Pool 10 (H.Gr.Low Vol.).....	Baltimore...	5.75	4.85	4.75	4.15@4.40	West Ky. mine run.....	Louisville...	4.25	4.25	3.85	3.50@3.75
Pool 11 (Low Vol.).....	New York....	4.35	4.10	3.85	3.50@3.75	West Ky. screenings.....	Louisville...	4.00	4.00	3.55	3.00@3.50
Pool 11 (Low Vol.).....	Philadelphia..	4.85	4.60	4.00	3.25@3.50	West Ky. lump.....	Chicago....	4.25	4.25	4.25	4.25@4.75
Pool 11 (Low Vol.).....	Baltimore...	4.85	4.35	4.25	4.00@4.10	West Ky. mine run.....	Chicago....	4.25	4.25	4.25	4.00@4.25
<b>High-Volatile, Eastern</b>						<b>South and Southwest</b>					
Pool 54-64 (Gas and St.).....	New York....	5.15	4.70	4.15	3.60@4.50	Big Seam lump.....	Birmingham..	3.95	3.75	3.75	3.45
Pool 54-64 (Gas and St.).....	Philadelphia..	4.60	4.60	4.25	3.75@4.25	Big Seam mine run.....	Birmingham..	3.30	2.80	2.75	2.60
Pool 54-64 (Gas and St.).....	Baltimore...	4.60	4.75	4.15	4.00@4.15	Big Seam (washed).....	Birmingham..	3.80	3.45	3.35	3.10
Pittsburgh sc'd. (Gas).....	Pittsburgh...	4.65	4.50	5.40	5.25@5.50	S. E. Ky. lump.....	Chicago....	4.25	6.00	6.25	5.00@7.50
Pittsburgh mine run (St.).....	Pittsburgh...	4.65	4.50	4.25	3.50@3.75	S. E. Ky. mine run.....	Chicago....	4.25	4.75	4.75	4.50@5.00
Pittsburgh slack (Gas).....	Pittsburgh...	4.65	4.50	4.00	3.75@4.25	S. E. Ky. lump.....	Louisville...	6.25	6.90	7.00	6.50@7.50
Kanawha lump.....	Columbus...	6.40	6.40	6.75	6.00@7.00	S. E. Ky. mine run.....	Louisville...	5.65	5.65	5.35	4.00@5.50
Kanawha mine run.....	Columbus...	6.00	5.75	5.90	4.00@5.35	S. E. Ky. screenings.....	Louisville...	5.25	5.50	5.10	4.00@4.25
Kanawha screenings.....	Columbus...	5.75	5.65	5.90	4.00@6.00	S. E. Ky. lump.....	Cincinnati...	7.00	6.85	6.50	6.00@7.00
W. Va. Splint lump.....	Cincinnati...	7.00	6.50	6.25	6.00@7.00	S. E. Ky. mine run.....	Cincinnati...	5.50	5.50	5.10	3.80@5.75
W. Va. Gas lump.....	Cincinnati...	7.00	6.50	6.25	6.00@7.00	S. E. Ky. screenings.....	Cincinnati...	5.40	5.10	5.00	3.50@4.50
W. Va. mine run.....	Cincinnati...	5.65	5.35	5.25	4.00@6.50	Kansas lump.....	Kansas City..	6.00	6.25	5.50	5.50
W. Va. screenings.....	Cincinnati...	5.40	5.10	4.75	3.75@4.50	Kansas mine run.....	Kansas City..	5.00	5.00	4.25	4.25
Hooking lump.....	Columbus...	6.25	6.25	6.25	6.00@6.50	Kansas screenings.....	Kansas City..	2.75	2.60	2.60	2.60
Hooking mine run.....	Columbus...	5.65	4.75	4.90	3.25@3.75	*Gross tons, f.o.b. vessel, Hampton Roads.					
Hooking screenings.....	Columbus...	5.40	4.25	4.50	3.25@3.75	†Advances over previous week shown in heavy type, declines in italics.					
Pitts. No. 8 lump.....	Cleveland....	5.75	5.00	4.85	4.50@5.25	NOTE—Smokeless prices now include New River and Pocahontas.					

### Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

INCLUDES PENNSYLVANIA STATE TAX

	Market Quoted	Freight Rates	Latest Independent		Pre-Strike Company		Oct. 2, 1922		Oct. 9, 1922†	
			Independent	Company	Independent	Company	Independent	Company	Independent	Company
Broken.....	New York....	\$2.34		\$7.60@7.75		\$7.75@8.15		\$7.75@8.15		\$7.75@8.15
Broken.....	Philadelphia..	2.39		7.75@7.85		7.90@8.10		7.90@8.10		7.90@8.10
Egg.....	New York....	2.34		7.60@7.75		7.75@8.35		7.75@8.35		7.75@8.35
Egg.....	Philadelphia..	2.39		7.25@7.75		7.75@8.35		7.75@8.35		7.75@8.35
Stove.....	New York....	2.34		7.90@8.20		8.00@8.35		8.00@8.35		8.00@8.35
Stove.....	Philadelphia..	2.39		7.85@8.15		8.05@8.35		8.05@8.35		8.05@8.35
Chestnut.....	New York....	2.34		7.90@8.20		8.00@8.35		8.00@8.35		8.00@8.35
Chestnut.....	Philadelphia..	2.39		7.85@8.15		8.05@8.35		8.05@8.35		8.05@8.35
Range.....	New York....	2.34				8.15		8.15		8.15
Pea.....	New York....	2.22		5.00@5.75		5.75@6.45		5.75@6.45		5.75@6.45
Pea.....	Philadelphia..	2.14		5.50@6.00		6.15@6.25		6.15@6.25		6.15@6.25
Buckwheat No. 1.....	New York....	2.22		2.75@3.50		3.50@4.00		3.50@4.00		3.50@4.00
Buckwheat No. 1.....	Philadelphia..	2.14		2.75@3.25		3.50@4.25		3.50@4.25		3.50@4.25
Rice.....	New York....	2.22		2.00@2.50		2.50@3.00		2.50@3.00		2.50@3.00
Rice.....	Philadelphia..	2.14		2.00@2.50		2.75@3.00		2.75@3.00		2.75@3.00
Barley.....	New York....	2.22		1.50@1.85		1.75@2.00		1.75@2.00		1.75@2.00
Barley.....	Philadelphia..	2.14		1.50@1.75		2.00		2.00		2.00
Birdseye.....	New York....	2.22		2.00@2.50		2.75		2.75		2.75

† Advances over previous week shown in heavy type, declines in italics.

### How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec. 1921	Jan. 1 to Apr. 1, 1922 Inclusive	Sept. 5 to Sept. 23, 1922 Inclusive	Week Ended Sept. 23
U. S. Total	45.6	55.7		87.9
Alabama	63.5	64.6	54.2	27.2
Somerset County	55.5	74.9	35.8	62.7
Panhandle, W. Va.	55.3	51.3	65.9	86.4
Westmoreland	54.9	58.8	88.7	50.8
Virginia	54.8	59.9	51.9	17.4
Harlan	53.3	54.8	18.1	12.7
Hazard	51.7	58.4	12.6	30.4
Pocahontas	49.8	60.0	34.9	45.0
Tug River	48.1	63.7	38.3	24.2
Logan	47.6	61.1	26.1	29.6
Cumberland-Piedmont	46.6	50.6	33.0	27.2
Winding Gulf	45.7	64.3	32.2	40.5
Kenova-Thacker	38.2	54.3	42.9	29.3
N. E. Kentucky	32.9	47.7	26.2	30.1
New River	24.3	37.9	31.7	56.0
Oklahoma	63.9	59.6	57.7	81.4
Iowa	57.4	78.4	85.4	47.5
Ohio, Eastern	52.6	46.6	51.4	65.6
Missouri	50.7	66.8	68.3	50.5
Illinois	44.8	54.5	49.5	63.6
Kansas	42.0	54.9	70.9	(a)
Indiana	41.4	53.8	(a)	54.8
Pittsburgh†	41.2	39.8	37.0	58.9
Central Pennsylvania	39.1	50.2	71.7	35.6
Fairmont	35.3	44.0	42.3	27.2
Western Kentucky	32.5	37.7	31.5	79.2
Pittsburgh*	30.4	31.9	26.4	15.5
Kanawha	26.0	13.0	11.8	41.8
Ohio, southern	22.9	24.3	43.1	

\* Rail and river mines combined.

† Rail mines.

(a) No report.

### Car Loadings, Surpluses and Shortages

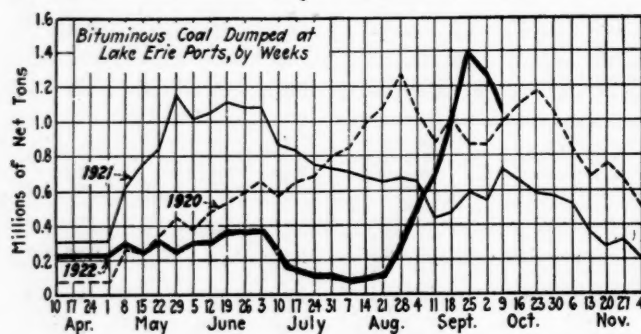
		All Cars	Coal Cars
Cars loaded:			
Week ended Sept. 16, 1922.....		973,291	187,896
Previous week.....		945,919	172,241
Same week a year ago.....		873,641	170,156

		Surplus Cars	Car Shortage
	All Cars	Coal Cars	
Sept. 23, 1922.....	11,292		107,666 32,148
Sept. 15, 1922.....	22,969	17,614	85,906 26,000
Same date a year ago.....	201,153	110,376	

tons in the previous week. Prices have softened, tempting a slight resumption of exports, but the coastwise market still absorbs most of the coal.

Lake dumpings, which were in unprecedented volume for the last two weeks dropped back to 1,087,265 net tons during the week ended Oct. 9, a decline of 158,108 tons as



compared with the preceding week. The total Lake movement, season to date is 11,276,568 tons; during the corresponding period of last year 19,595,800 tons had been dumped.

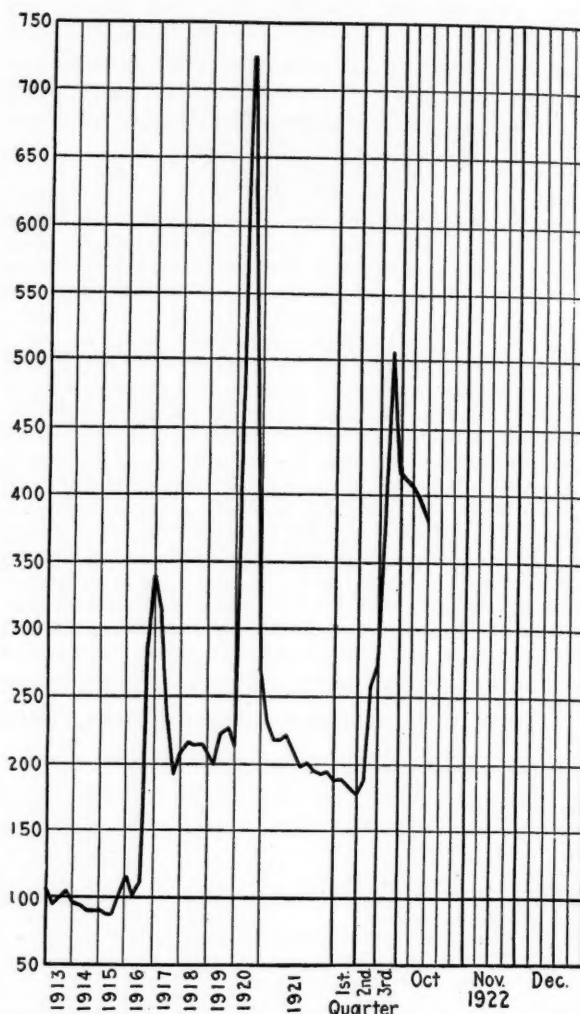
### COKE

Beehive coke production took a gratifying leap to 162,000 net tons during the week ended Sept. 30, an increase of 25,000 tons as compared with the preceding week. With the exception of West Virginia all districts showed increases. The Connellsville output is the largest since the recovery first started.

Spot furnace coke is as scarce as ever, however, and in general there is not enough tonnage offering to tempt furnaces to resume even if they were willing to pay the going price. There is just enough buying of foundry coke to support the market.

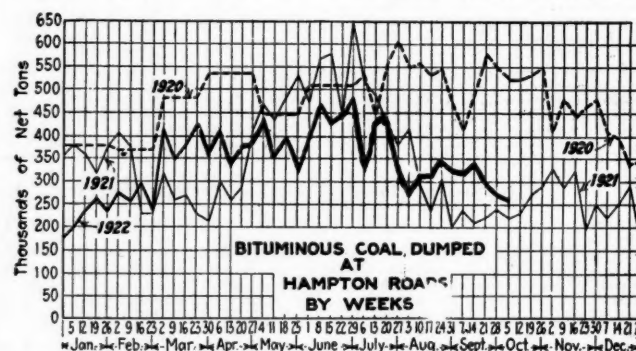
### ANTHRACITE

Production of anthracite continues at around 1,900,000 net tons a week. During the week ended Sept. 30 the output was 1,947,000 net tons. Early reports of last week indicated that production will again be around this figure.



Coal Age Index 380, Week of Oct. 9, 1922. Average spot price for same period, \$4.60. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the U. S. weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board.

Independent prices show a wide range. The family sizes are going as high as \$14@15 in the outlying districts and in Canada, while Eastern centers are paying around \$9.50. This is especially true in Philadelphia where high-priced



coal is being little quoted and rarely, if ever, taken. New York market prices have dropped from the high range quoted last week. The steam market has been extremely hard hit by the heavy tonnage and the strong competition of bituminous coal.

Unless coal reaches the bins shortly, the only place many Americans will be warm this winter will be under the collar. —*Indianapolis Star*.



## Foreign Market And Export News

### British Obtain Orders from Continental Markets; Prices Held Firm

Best British coals continue to strengthen. There is a good demand from Germany, Canada and Italy. The lower grades are more freely offered, however, and with less price firmness. A cable to *Coal Age* places the output during the week ended Sept. 23 at 5,144,000 gross tons as compared with 4,995,000 tons in the preceding week.

Much anxiety is felt over the threat of Welsh miners to give notice to terminate all contracts on Nov. 5, unless the non-union miners join the Miners' Federation.

The outlook in Durham and Northumberland is considerably brighter. The past few days has been marked by a revival of Continental inquiries and orders, which are more welcome than the American orders. The special feature of the European awakening is the interest taken by the Continental gasworks. The European railways are taking more British steam coals, and 150,000 tons have been sold on German account.

The same feature is found in the Yorkshire fields, where the export trade has picked up appreciably. Forward ordering has attained a level which leads the operators to believe that the Continental market is regaining the pre-war standard. Another feature of the Yorkshire area is better business in the home markets.

#### Coal Freight Rates Reduced in France

French coals from the Nord and Pas-de-Calais area have still a favorable market. There is now quite a rush for domestic. Industrial coals also are in a favorable situation. Gas coals are very scarce.

On the other hand, the situation of the minor fields of the center of France, which are feeling the pinch of the competition of Lorraine and Sarre coals, is far from being as satisfactory and more small mines are closing.

The various reductions on rail rates for coal from the Nord and Pas-de-Calais have been approved by the French Minister of Public Works for a provisional period of three months from

Sept. 20. These are deemed insufficient by French collieries, all the more so as they are offset by a similar reduction granted on the transportation of Sarre and Lorraine coals.

No progress is to be reported in the conflict between operators and men, but a general strike of miners about the middle of October is not at all impossible. Mines of the Nord and Pas-de-Calais are said to be already preparing for it by slackening down their shipments.

Representatives of the Swiss Federal Railways are now negotiating with French reconstructed collieries for a briquet contract.

#### United States August Coal Imports

	Gross Tons	Value
Anthracite:		
Imported from:		
United Kingdom.....	30,772	\$165,657
Canada.....	802	6,334
Total.....	31,574	\$171,991
Bituminous:		
Imported from:		
United Kingdom.....	606,050	\$2,872,845
Canada.....	225,352	1,424,320
Australia.....	35,519	199,775
Denmark.....	2,692	15,075
Other countries.....	719	5,464
Total.....	870,332	\$4,517,479

#### Hampton Roads Market is Weaker

The market was dull last week, a slight movement in export business proving the only redeeming feature. For the first time in many months the piers reported only about 10,000 tons of vessels waiting for cargo. Prospects for increased movement in the immediate future were very slight.

Prices continue downward, and shippers express the hope they might drop far enough to permit a stronger movement of export coal. Large stocks are on hand at the piers.

#### Coal Paragraphs from Foreign Lands

ITALY.—The price of Cardiff steam first is quoted at 39s. 6d., according to a cable to *Coal Age*.

AUSTRIA.—The output of coal and lignite during the first half of 1922 was 1,674,000 tons; a falling off in the

second quarter (810,000 against 864,000 tons in the first) due to serious labor troubles.

INDIA.—The tendency of the coal market is weaker. Supplies are adequate. Mills and railways are not in the market and quotations are unchanged.

BELGIUM.—The market is very firm, both in the domestic and industrial sections. Briquets are in great demand for home consumption and for export.

GERMANY.—Production in the Ruhr region during the week ended Sept. 24 was 1,892,000 metric tons, according to a cable to *Coal Age*, as compared with 1,847,000 tons in the preceding week.

#### Hampton Roads Pier Situation

	(Week Ended)	Sept. 28	Oct. 5
N. & W. Piers, Lamberts Point:			
Cars on hand.....	1,235	1,397	
Tons on hand.....	75,226	85,763	
Tons dumped.....	113,785	121,923	
Tonnage waiting.....	27,600		
Virginian Ry. Piers, Sewalls Point:			
Cars on hand.....	923	1,301	
Tons on hand.....	54,500	81,100	
Tons dumped.....	70,104	53,647	
Tonnage waiting.....	7,509	9,923	
C. & O. Piers, Newport News:			
Cars on hand.....	910	614	
Tons on hand.....	45,500	30,700	
Tons dumped.....	71,143	59,202	
Tonnage waiting.....	3,850	1,550	

#### Export Clearances, Week Ended Oct. 5, 1922

FROM HAMPTON ROADS:		Tons:
For Cuba:		
Br. S.S. Berwindvale, for Havana.....		7,849
Am. S.S. Guantanamo, for San Juan.....		4,324
Am. S.S. Lake Fernwood, for Santiago.....		498

#### FROM PHILADELPHIA:

Br. S.S. Ceuto, for Antilla.....		
Nor. S.S. Munorway, for Havana.....		

#### Pier and Bunker Prices, Gross Tons

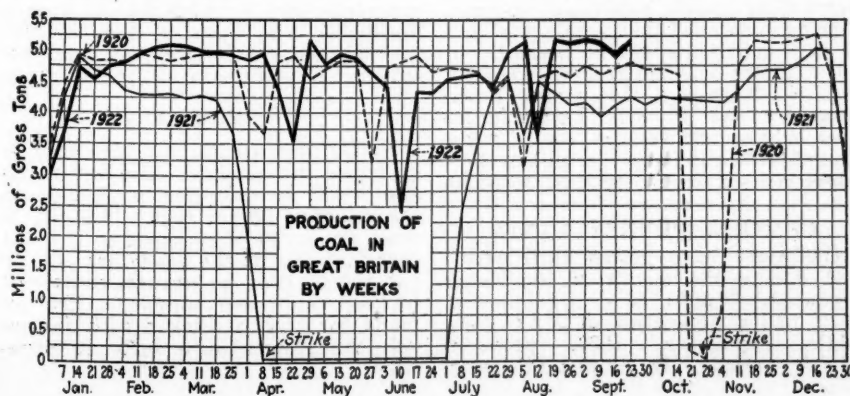
PIERS		Sept. 30	Oct. 7†
Pool 9, New York.....	\$7.50@ \$8.00	\$8.00@ \$8.25	
Pool 10, Philadelphia.....	\$7.25@ \$7.75	\$7.25@ \$7.75	
Pool 11, Philadelphia.....	\$7.25@ \$7.75	\$7.25@ \$7.75	
Pool 10, New York.....	\$7.75@ \$8.00	\$7.50@ \$7.75	
Pool 11, New York.....	\$7.50@ \$7.75	\$7.25@ \$7.50	
Pool 1, Hamp. Rds.....	\$7.75@ \$8.10	\$7.00@ \$7.50	
Pool 2, Hamp. Rds.....	\$7.75@ \$8.10	\$7.00@ \$7.50	
BUNKERS			
Pool 9, New York.....	\$8.00@ \$8.50	\$8.30@ \$8.55	
Pool 10, Philadelphia.....	\$7.25@ \$7.75	\$7.25@ \$7.75	
Pool 11, Philadelphia.....	\$7.25@ \$7.75	\$7.25@ \$7.75	
Pool 10, New York.....	\$7.75@ \$8.00	\$7.50@ \$7.75	
Pool 11, New York.....	\$7.50@ \$7.75	\$7.25@ \$7.50	
Pool 1, Hamp. Rds.....	\$7.75@ \$8.10	\$7.00@ \$7.50	
Pool 2, Hamp. Rds.....	\$7.75@ \$8.10	\$7.00@ \$7.50	
Welsh, Gibraltar.....	40s. f.o.b.	40s. f.o.b.	
Welsh, Rio de Janeiro.....	57s. 6d. f.o.b.	57s. 6d. f.o.b.	
Welsh, Lisbon.....	50s. f.o.b.	50s. f.o.b.	
Welsh, La Plata.....	50s. f.o.b.	50s. f.o.b.	
Welsh, Genoa.....	42s. t.i.b.	42s. t.i.b.	
Welsh, Algiers.....	41s. 6d. f.o.b.	41s. 6d. f.o.b.	
Welsh, Pernambuco.....	65s. f.o.b.	65s. f.o.b.	
Welsh, Bahia.....	65s. f.o.b.	65s. f.o.b.	
Welsh, Madeira.....	45s. 6d. f.a.s.	45s. 6d. f.a.s.	
Welsh, Tenerife.....	43s. 6d. f.a.s.	43s. 6d. f.a.s.	
Welsh, Malta.....	42s. 6d. f.o.b.	42s. 6d. f.o.b.	
Welsh, Las Palmas.....	43s. 6d. f.a.s.	43s. 6d. f.a.s.	
Welsh, Naples.....	42s. f.o.b.	42s. f.o.b.	
Welsh, Rosario.....	52s. 6d. f.o.b.	52s. 6d. f.o.b.	
Welsh, Singapore.....	52s. t.i.b.	52s. t.i.b.	
Welsh, Constantinople.....	50s. f.o.b.	50s. f.o.b.	
Welsh, St. Michaels.....	50s. t.i.b.	50s. t.i.b.	
Welsh, Alexandria.....	40s. f.o.b.	40s. f.o.b.	
Welsh, Port Said.....	51s. 6d. f.o.b.	51s. 6d. f.o.b.	
Welsh, Oran.....	40s. f.o.b.	40s. f.o.b.	
Welsh, Fayal.....	50s. t.i.b.	50s. t.i.b.	
Welsh, Dakar.....	46s. 6d. f.o.b.	46s. 6d. f.o.b.	
Welsh, St. Vincent.....	46s. f.a.s.	46s. f.a.s.	
Welsh, Montevideo.....	50s. f.o.b.	50s. f.o.b.	

#### Current Quotations British Coal f.o.b. Port, Gross Tons

##### Foreign Quotations by Cable to Coal Age

Cardiff:		Sept. 30	Oct. 7†
Admiralty, large.....	26s. @ 27s.	27s. @ 28s.	
Steam, smalls.....	16s. @ 16s. 6d.	16s. @ 16s. 6d.	
Newcastle:			
Best steams.....	24s. 6d. @ 25s.	25s. @ 26s.	
Best gas.....	23s. @ 24s.	23s. @ 23s. 6d.	
Best bunkers.....	23s.	22s. 6d. @ 23s.	

†Advances over previous week shown in heavy type; declines in italics.



## North Atlantic

### Heavier Offerings in East With Western Railway Jam

**Embargoes and Shipping Conditions Complicate Situation—Average Consumer Still Banks on Price Decline, Deaf to Warning of Shortage—Railroads Buying Heavily.**

Rail congestion in the West has thrown heavier offerings eastward. The movement is very slow, as there are many embargoes and shipping conditions are becoming more complicated each day. British coal continues to arrive, but in smaller volume.

Prices are dropping slowly and each decline reassures the average consumer of the wisdom of his buying policy. He is deaf to warnings of a shortage to come and maintains his attitude of aloofness, covering only on current requirements. Railroads, however, are taking heavy tonnages, assigning so many cars for this business that the supply for loading commercial coal is very meager.

There is almost no inquiry at Tidewater. Line shipments are slow in getting through from the mines and sellers are devoting much of their attention to tracing cars to destination.

#### PHILADELPHIA

There is a lack of market activity, efforts of the shipping houses being confined mostly to endeavoring to get coal on the road forwarded to destination. The consumer for the most part continues in his aloofness, and when he does make purchases is very much inclined to shop around.

The producer is not doing a great deal of urging of tonnage on customers, as he has very little free coal anyway, and the consumer is somewhat resentful when quoted prices are not at his level.

There are so many freight embargoes of various kinds in effect that shippers are unable to keep track of them, and in the meantime are unable to get sufficient cars to keep their mines to capacity. One shipper interviewed stated that on a single day last week on an allotment of 90 cars he received 3 and declared this is typical of his operations on both the Pennsylvania and B. & O. Prices have receded, and with each slight drop the consumer points out that his level will be reached before long.

This week there was probably an average recession of 25c. a ton all around, and yet at these prices more than one producer claims to be digging coal at a loss, due to his curtailed output.

Railroads are endeavoring to accumu-

late stock, yet on assigned car orders they have been unable to deliver sufficient cars in all cases to meet their own needs. The prices they are willing to pay for low-volatile coal is around \$4, and for high-volatile, \$3.25.

#### BALTIMORE

A curious twist has arisen in the local situation for, whereas car supply is wretched and demand as compared with the light deliveries seems fairly good, there is a softening of the price list. Some of the producing interests report that they are maintaining the price list that has been set for a couple of weeks past, but there are undoubtedly cuts of considerable nature from the hands of other large producers and this has lowered the general average of sales.

The fact that there is not much Pool 9 on the market has held that a little better than is the case with Pools 10 and 11, wherein the principal drop has come. Car supply is the most serious feature of present conditions. On some days the B. & O. run of empties to mines falls below 20 per cent. The movement of British coals to Baltimore continues heavy and there is ready absorption so far for what has come in.

#### NEW YORK

There is practically no inquiry at Tidewater, but line demand is more active. Buyers are not anxious to stock up although inducements in the way of lower prices might be offered. Arguments, such as a shortage of cars, are being employed but to no avail. Some consumers look for much lower prices than the present.

With production running at its present level consumers believe there will be further breaks and notwithstanding the lack of cars they will be able to get all the coal needed. Another reason for the lack of demand was the removal of restrictions.

There were close to 1,300 cars at the local piers on Oct. 6. In addition there was considerable British coal to be had at from \$6.75@7 alongside.

Receipts of British coal are growing smaller. With the "fixing" of three Shipping Board vessels this week it is believed they will be among the last. During the week nine vessels, carrying a trifle more than 58,000 tons, arrived here.

Efforts are being made to have the restrictions against bunkering removed, it being contended that within the next 30 days conditions will be normal.

Quotations on some grades, especially Pool No. 9, show a wide range. Punxsutawney and P. R.R. high-volatiles were held around \$4; gas, run of mine, around \$4.75, gas lump 75c. higher. Bessemer coals were quoted close to \$3.50.

#### CENTRAL PENNSYLVANIA

Operators have gotten their stride and during the month of September produced 76,500 cars. September, 1919, had a production of 90,527 cars, while September, 1920, produced 93,015 carloads. In August this year,

the production was 30,364, while in July the total was 14,076 carloads.

The car shortage, particularly in the western part of the district, continues quite aggravating. Prices remain stable, Pool 11 being quoted at \$4 and Pool 1 at \$5@5.50.

#### UPPER POTOMAC

For the first time in several months there was a car shortage in evidence on the line of the Western Maryland in the Potomac field. The curtailed supply of reduced production at a time when the rate of output was about 60,000 tons a week or not far from normal. The curtailed supply of empties, however, found mines with less of a demand to meet owing to the large tonnage in Eastern markets, the effect of which has been to reduce prices.

#### FAIRMONT

Industrial demand was at rather a low ebb during the closing week of September. This was attributed to the large volume of coal pouring into Eastern markets as Western shipments were embargoed, even to the Lakes, at times. The car supply is becoming more and more restricted. The only mines having cars to amount to anything were those having railroad fuel orders. Operators complain that the Baltimore and Ohio is assigning cars once again and that it is next to impossible to secure equipment for commercial loading.

### South

#### BIRMINGHAM

The problem of the trade continues to be one of car supply. The quota furnished the past week ranged from 30 to 40 per cent of the number needed, and the prospects of any material improvement in the near future are not bright. Much of the equipment of local carriers found its way into foreign territory during the period of shortage caused by the strike and has never been returned to the owners.

There is a strong and urgent domestic demand from every direction. Dealers with contracts are not receiving their quota by any means, due to car shortage. The easing off in the demand for steam coal is also affecting the supply.

Quotations are remaining fairly stable on steam grades though some seams have been selling 25c.@35c. under the maximum schedule the past week.

The output is holding up well considering the acute car shortage, a total of 345,000 net tons being reported for the week ended Sept. 23, the last figures available. The week of Sept. 30 will probably show a decrease, as transportation conditions were not so favorable.

#### VIRGINIA

So far mines have not been able to overcome the handicap of a car shortage which is curtailing production to the extent of 50 per cent. It is not so much the strike of shopmen as it is the fact that few of the roads are able to put their hands on enough equipment to keep the mines supplied. The demand for coal is weaker with the result that prices have softened somewhat.



## Anthracite

### Rush in Domestic Business, Steam Sizes Drug on Market

**New York Harbor Terminals Clogged with Commercial Coal, Which May Affect Fuel Situation—Warm Weather Prevents Scramble in Portioning Out of Household Coal.**

New York harbor terminals are heavily congested with steam loads of anthracite. Railroad officials fear that the tying up of these cars will seriously affect the fuel situation at New York. Steam sizes quickly became a drug on the market following the resumption of mining, and those producers who have such facilities are now storing these grades.

Domestic business is, of course, rushing. Coal is being portioned out to consumers in small lots and the unseasonably warm weather has fortunately delayed the inevitable rush of householders. Independent quotation show a wide range but the extremely high-priced coal is going to small towns or Canadian points, as Eastern distributing factors are loath to pass on these premiums to their customers.

#### NEW YORK

Lack of demand has resulted in an accumulation of steam coals here. At the end of the week there were about 3,500 cars containing upward of 175,000 tons at the various railroad terminals adjacent to the New York harbor.

Because of the failure of consumers to take this coal the larger mining companies have reduced the output of these sizes by closing down various washeries and are again storing the present production. That there should be an oversupply at this time is attributed to the supply of bituminous.

Dealers predict that unless the weather becomes unusually colder during the next four weeks and with production continuing at or about the same basis as at present, the situation will be comparatively easy. In the West, however, users of anthracite will be forced to take soft coal.

Quotations for independent domestic coals cover a wide range starting at \$9.25, most of the big operators going as high as \$9.50.

#### PHILADELPHIA

Moderate shipments to retailers are coming in and as a result deliveries to consumers are going along quietly. The remarkable run of warm weather has tempered the demand considerably.

There is much speculation as to the relative scarcity of pea, as most dealers had an idea it would be plentiful. Numerous dealers have put in requests urging prompt delivery of this size, probably not with the idea of moving

it at once, but to get some stock ahead.

Retail prices are unchanged. Wholesale quotations show no appreciable change in the last week. Independent prices higher than \$9.50 are heard repeatedly, but sales are rare.

The State Fuel Commission is hearing the arguments of independent shippers to establish their right to get more than \$8.50. It is likely the present prices will be approved in all cases, and in a few instances even higher figures will be allowed later.

Steam sizes are moving along nicely, although there is just the slightest tendency for a slowing down on rice, but all shippers are easily able to get full prices. Some retailers are taking a small tonnage of buckwheat, generally at the urging of the shippers.

#### BUFFALO

Demand is rushing. It would be impossible for a while to satisfy the consumers with five times the ordinary supply.

The independent mines are trying to ask from \$12 up, but jobbers are afraid to buy, because they have to report their sales to the fuel administrator and the prices they have to ask look bad. It will be a long time before the trade is easy.

The effort of the Lake seamen to tie up the fleet by a strike appears to have failed. The steamers move as usual. The west-bound coal movement is light. Shipments to date since the beginning on Sept. 23 have been only 91,600 tons, of which 46,600 tons cleared for Milwaukee, 31,300 tons for Duluth and Superior, 13,700 tons for Chicago and 7,700 tons for Sheboygan. Rates are 40c. to Duluth, 50c. to Milwaukee, Sheboygan and 50c. to Chicago.

#### BOSTON

Shipments are coming forward steadily. There are large retail distributors who have not yet had cargoes of prepared sizes, but there seems less anxiety than a fortnight ago. The unseasonably warm weather has delayed the on-coming rush, but in another fortnight there will be heavy pressure on all the anthracite channels to provide increasing supplies.

No change has yet been made in retail prices. What coal is being passed out is at figures that prevailed during the spring, except in pea sizes which is either sold mixed with other sizes or commands a price on an equality with them.

#### BALTIMORE

Receipts are light and dealers are sticking to their resolve to deliver not more than one or two tons to a customer. Additional receipts are expected as a result of the announcement of the B. & O. of a new freight rate of \$3.28 on coal from the Schuylkill field of Pennsylvania. This rate was arranged by agreement with the P. & R. and the L. & N. E. railroads. The B. & O. will carry coal from the Schuylkill field at the same rate charged by

the Pennsylvania for coal from the field which they tap.

The Maryland Distribution Committee has taken up with Pennsylvania producers the question of supplying peck and bushel men in this city who claim that they are unable to get any coal whatsoever. It is planned to work out some measure by which the poor of the city who buy in bushel and peck lots will be able to get supplies.

## Coke

### CONNELLVILLE

Connellsville coke remains as scarce as ever and prices on an average are a shade above those of a week ago, with furnace at \$12@12.50 and foundry at \$13.50@14. An additional furnace has resumed on coke bought in the open market, a second Shenango stack, while Struthers furnace blew in Oct. 7 on coke obtained through an old contract. In general there is not enough coke in the open market to enable any furnaces to resume by simply buying coke, while most furnaces would probably hesitate to pay present prices even if they were sure of getting a steady supply.

Consumers have shown such an indisposition to pay present pig iron prices that furnaces are not as disposed to get into blast as might be supposed from a mere comparison of coke and pig iron prices.

There is a good bit of inquiry for foundry coke, but the majority of foundries seem unwilling to pay present prices. Enough are willing to buy to support the market at its present level, with offerings relatively limited.

The *Courier* reports production during the week ended Sept. 30, at 90,250 tons by the furnace ovens, and 28,430 tons by the merchant ovens, a total of 118,680 tons, an increase of 13,340 tons.

### UNIONTOWN

Despite an acute car shortage coal prices have slipped off several notches, with \$3.25@3.50 prevailing and probably sales made at lower figures. Brokers and operators report difficulty in finding destination for large shipments but encounter very little trouble in placing small lots. That would infer that buyers have placed their coal requirements upon a hand-to-mouth basis.

That the union intends continuing its fight in the Connellsville region seems indicated by the erection of barracks at the Leisenring plants to house evicted miners who are now living in tents. At both Uniontown and Connellsville there are evicted families living with other families. At Uniontown health authorities ordered a dozen families out of an old warehouse because of health conditions as well as the menace of fire. Many of the families are reported to be in dire straits and the drift back to the mines has increased.

### BUFFALO

Demand is light, but the supply is so small that high prices are generally maintained. But for the fact that we have a good line of byproduct ovens the prices of beehive coke would soar still more.

## Chicago and Midwest

### Bottom Softens Under Midwest Coal Trade

**Even Domestic Demand, Which Has Been Strong, Is Weakening—Steam Prices Sag Lower—Rail Service Continues Bad—Cold Snap Desired.**

The entire Midwest is getting deeper and deeper in the "grumps." Warm weather, reports of tremendously heavy car loadings in the Eastern fields and news of miner-operator peace have combined to rob the trade of its one bolstering feature, strong domestic demand. Dealers are now having trouble in moving household coal. The result is that producers are having difficulty in keeping out of the red and the pressure for a reduction in domestic mine prices is becoming insistent. The steam buyers' strike of big consumers is still determinedly pulling screenings prices lower and lower.

Rail service is generally worse. Crops are bagging most of the motive power. It cannot be said that the mines are so urgently requesting cars in most fields. Those properties holding heavy contracts are the only ones that could use a 50 per cent car supply if they could get it and even contract business is none too dependable under present conditions.

All Illinois fields are shut down for days each week, averaging for the state around 30 per cent. Indiana is similarly situated. Western Kentucky is finding a slightly better market, especially in the South. What is really needed is some good stiff weather that will bolster the domestic trade as well as aid the steam situation.

#### CHICAGO

With continued unseasonably warm weather and an exceedingly short car supply, the coal market is undergoing a severe strain. From every branch of the business come reports that very little buying is being done. The strong demand which has kept the domestic business alive, has at last shown signs of softening. Mines all state that running time is getting worse.

In several instances domestic orders have been canceled, which must be considered unusual at this time of the year.

There is practically no spot market for screenings, as steam buyers continue to stay out of the market.

Local jobbers are announcing that they are handling no spot Pocahontas at all. Their time is largely taken up with trying to get coal through to sat-

isfy their contract business. They report some improvement in rail conditions with the past few days; however, they are doubtful if any appreciable spot market will develop for some time.

#### WESTERN KENTUCKY

Steam coal prices slumped off during the week considerably, and some screenings are now quoted as low as \$3, although the market ranges as high as \$3.75, along with mine run which is quoted \$3.50@3.75. Lump is strong at \$5@5.50, and if any sales have been made at under the \$5 figure the past few days, the operators are keeping it to themselves.

Although reports have been heard from Illinois and other points of screenings being in such small demand that operators have been dumping them at any price in order to load out lump, there is no dumping of screenings in western Kentucky, where car supply is probably as bad as anywhere in the country. With lump at \$5 and up and screenings at \$3 and up, the mine run price is something over \$4.

Demand is principally from Southern cities, as Chicago and long-haul points are being offered plenty of coal from other districts, and with the present small car supply operators do not need more business and are not forced to cut prices. Demand for lump is keener.

#### LOUISVILLE

According to some well-posted coal men a demand for domestic fuel is going to hit soon when the weather turns cold, which will make the price waiters mighty sick. Some operators claim there is a "buyers strike" of domestic and industrial consumers. This does not check with reports of operators who say they are loading out all the coal they can get cars for. As a matter of fact buyers are not bidding up prices, therefore operators are talking of the "strike."

Retailers are willing to buy lump and even stock it at a reasonable price, but not at \$5 and up. As a result production is principally on mine run, and this is moving out as fast as roads can supply cars.

Lake movement, along with steel plant, gas, byproduct and utility demand on eastern Kentucky, is not hampering production any considering a car supply reported at about 20 per cent. Gas coal is carrying a premium over steam, it being quoted \$5@5.75 for best mine run, whereas non-gas is \$4.25@4.50, with some low grade at \$4.

#### SOUTHERN ILLINOIS

The movement of cars in the Carterville field has shown up some better the past week but the shortage seems to increase. A record check at one mine on the Missouri Pacific the past week showed 7 per cent equipment furnished, on the Burlington 13 per cent and on the Illinois Central 15 per cent. These figures are taken from mines having all three roads. It would

check about 35 per cent car supply. Steam sizes are heavy and several mines have screenings and small sizes unbilled. This situation is depressing and is accounted for by warm weather. A somewhat similar condition exists in the Duquoin and Jackson County field.

In the Mt. Olive district there is considerable trouble moving steam coal. Domestic sizes are not moving freely on account of hopper bottom equipment which the dealers cannot unload. In this particular field the return movement of empty cars is not good, although about a 2- or 3-day car supply is furnished.

In the Standard district steam sizes are holding up everything on account of their inability to move and this will likely continue for some time unless severe weather sets in. The market seems to be weakening and some mines have so many "no bill" steam sizes that many roads are refusing to furnish any more equipment until the loads are moved.

#### ST. LOUIS

Warm weather and an indifferent public have brought the local market to the point of demoralization. Orders are coming in for small quantities but earlier orders are cancelled in the hope of warm weather and a slump of domestic coal along with steam sizes. The local steam trade is lagging, figuring on buying cheaper coal. This attitude is forcing the market rapidly. Many St. Louis steam plants are still using oil. Oil competition has been felt all over the Midwest. Again, there is another April 1 not far off that the steam trade fears. In St. Louis recently the Scullin Steel Co., United Railways and City Waterworks quit oil for coal. In East St. Louis and Granite City coal to the tonnage daily of about 20 to 30 cars has recently supplanted oil. But the Frisco will have all of its divisions using oil except the River and Cape between St. Louis and Memphis and the Alabama division between Memphis and Birmingham by April 1, 1924. This will throw out between 3,000 and 4,000 tons of coal daily.

Both country domestic and steam trades have been good up to the present but have followed the action of the St. Louis dealers quickly in curtailing shipments. A little snappy weather will brighten things up. There is no anthracite to speak of coming in and no smokeless. Coke production is light and the condition generally is far from satisfactory.

#### INDIANAPOLIS

Although the coal situation has not changed within the last few days and prices have held steady, some coal men believe a break in prices will come soon. The demand is not strong and retail dealers say they are having no difficulty in getting sufficient tonnage to supply the domestic market. Dealers are not getting enough to stock, however. It is doubtful if they would at present prices anyway.

The weekly statement of the Indiana Retail Coal Merchants' Association said: "While it is believed the general trend of mine prices will be downward, there is nothing at present to indicate that there will be any change in the price of domestic coal soon. Steam is off, due to an alleged buying strike on the part of large industrial consumers.



## Eastern Inland

### More Pressing Need of Coal Gives Market Better Tone

**While Buyers Seem to Seek Only Current Needs There Are More of Them—Ohio Price Schedule Causes Shippers to Force Lake Markets—Lake Dumpings Still Heavy—Pittsburgh Market Dull.**

There is a slightly better market tone. Under pressure of growing coal needs and more firmly held prices industries are showing signs of interest. There is no snap to the market but it has lost some of its apathetic tone of the last few weeks. The general policy has been to buy for current needs only, but more of such takers are in the market.

Governor Davis' announcement of the temporary Ohio fair price list has caused some operators to say that if it is enforced they must send their product out of the state, where higher figures can be obtained. The establishment of these prices is causing shippers to force the Lake market, which is paying \$4.25 for good No. 8, as compared with Ohio's list of \$3.56.

Lake dumpings are still heavy, although rail congestion is reducing the movement somewhat. Vessels are clearing quickly and but little effect of the Lake seamen's strike has been felt as yet. Dumpings at the lower ports during the week ended Oct. 9 were 1,087,265 net tons, as compared with 1,245,373 tons in the preceding week.

The Pittsburgh market is still distinctly dull. Consumer requirements seem to have been over-estimated. However, the sluggish market is not a factor in controlling the output as yet, as cars are far too scarce to permit prompt loading of the orders in hand.

#### PITTSBURGH

Demand has fallen off in marked fashion and the market is commonly described as being distinctly dull. Prices have declined 25c. @ 50c., but are now practically stationary.

All told, consumptive requirements do not seem to be as heavy as was predicted. The average buyer is quite content to cover his immediate requirements, showing no disposition to buy even for a short time ahead. Demand from retail dealers is fair, but seems to be for current distribution only, the dealers being unwilling to put in any stocks. Truck mines are

still doing considerable business in domestic fuel and in some cases are making prices well below what can be done on rail coal.

Production is not affected by the dull market as prices still show a wide margin. The limiting factor in production is car supply, which is hardly as good as 30 days ago and is of course far below mine capacity.

The market is quotable at \$3.50 @ \$3.75 for good grades of steam coal, \$4.50 for byproduct, \$4.50 @ \$4.75 for good gas, all mine run, and \$5.25 @ \$5.50 for best grades of domestic 14-in. lump.

#### BUFFALO

Shippers are urging consumers to buy, pointing to the fast-growing shortage of cars, but the advice is not much heeded. The talk is called mere effort to work off coal. So the prices weaken and the more they go down the more the consumers refuse to buy. The movement is declared to be less than consumption, but the consumer does not mind that, so long as he believes that he is pounding down the price. The decline is not likely to last. In fact, the shipper is unable to see how the opposite is not the case. One thing is doubtless overlooked. The natural production is large and somebody is managing to get his coal to destination.

As to prices there is naturally a wide range. Some shippers manage to get as high as \$6.50 at the mines for gas or Pittsburgh lump and some mines are offering good coal below \$4. A fair average is \$4.50 for Allegheny Valley mine run and \$5 @ \$5.25 for Pittsburgh lump, with a little more for gas lump. The freight to be added for Buffalo delivery is \$2.09 for Allegheny Valley and \$2.24 for Pittsburgh.

#### CLEVELAND

A slightly better tone in the market is reported. There is nothing resembling activity, but operators and dealers are somewhat encouraged by what they believe is a growing disposition of buyers to come into the market at prevailing prices. For some weeks consumers have been holding out for lower levels.

Under the pressure of growing coal needs, and with the price showing no further evidence of important declines, industries are giving indications of buying. The state fuel commission has announced the official scale of "fixed" prices. The level of \$3.56 for No. 8 mine run is regarded by most operators as unreasonably low. Since there is a fairly good market for this in the Lake trade at \$4.25, as much coal as possible will be sent out of the state. The shortage of cars is becoming more and more pronounced in this district. Current quotations are shown in the Weekly Review.

The Lake movement continues at high speed, apparently undisturbed by the walk-out of the union seamen. It is

now believed that it will be possible to ship the Northwest more than 15,000,000 tons, which was regarded as the limit a month or so ago. Fears of shortage in the Northwest are greatly diminished and there is no panic of buyers apparent.

#### NORTHERN PANHANDLE

Accumulation at the Lakes constitutes the most serious interference with the movement and is having a tendency to check production. Although there is not quite so strong a demand for steam coals, nevertheless more coal could be moved if the transportation situation permitted but terminals are clogged with cars. There is more of a demand for lump than any other grade.

#### COLUMBUS

While the "buyers strike" is not over, still there is evidence of a disposition to buy. Lake shipments are going forward, many embargoes having been removed.

Householders are coming into the market more and more, but the continued warm weather is still delaying them. Retail prices are rather steady at former levels, with Hocking lump, \$8.75 @ \$9.50 and smokeless grades up to \$11.

The Pennsylvania has removed its Lake embargo and the same is true of other Lake-carrying roads. The New York Central is still badly involved and little coal is going through on either the K. & M. or the T. & O. C. H. V. Ry., shipments are not interfered with.

#### DETROIT

Not very much interest is being manifested in the market. Summerlike temperatures during the week have soothed the household consumers into lethargic indifference. Detroit's receipts are still far below the amount which dealers estimate as the city's average daily consumption.

A theory advanced by some that the strike of the sailors' union of the Great Lakes against the Lake Carriers' Association effective since Oct. 1, would so handicap the shipping interests as to reduce coal loading and increase the quantity available for shipment to Detroit, has not developed into actuality, as the boats of the Lake Carriers' Association are being maintained in operation, apparently unobstructed by the strike and the volume of coal loaded last week approximates 1,000,000 tons.

The larger part of the present supply is coming from mines in Ohio. Hocking lump and egg is quoted at \$6, mine run, \$3.75 @ \$4, nut, pea and slack, \$3.25 @ \$3.50. Pittsburgh No. 8 3-in. lump is \$5, mine run, \$4 @ \$4.25, slack, \$3 @ \$3.75. Fairmont 3-in. lump is \$5, mine run, \$4.50 @ \$4.75, slack, \$4.50. Smokeless lump and egg holds around \$8.50, with mine run \$6.50 @ \$6.75. West Virginia and Kentucky lump and egg is \$6.25 @ \$6.50, mine run, \$4.75, slack, \$4.50 @ \$4.75.

Anthracite is arriving in small amount. Jobbers are receiving independent quotations of \$12 @ \$14 at the mines. The freight charge is \$4.66, making the retail price very high.

## Northwest

### No Fear of Famine in Upper Lake States

**Bituminous Receipts So Heavy During Recent Weeks and Demand So Light That Docks May Stop Shipments—Hard-Coal Cargoes Also Arrive.**

The Northwest is experiencing another "spot" in its spotted pre-winter season. Its fear of a fuel famine has been so completely dispelled by tremendously heavy cargo receipts recently that it has forgotten the specter it saw in August. This has reduced consumer demand and coal is now piling up on the docks. Dock men are about to curtail orders lest they be caught this winter with too much surplus, secured at high prices just at the time that all-rail competition is to be expected. It appears that only a cold snap will remedy this peculiar situation.

Even anthracite is beginning to come in small lots. At Milwaukee the old prices prevail but at the Head-of-the-Lakes, where less tonnage has penetrated, it is expected the price will be higher.

#### MINNEAPOLIS

The Northwest's fear of a coal famine is about gone. It now appears evident that enough fuel will have arrived by the close of navigation to prevent any suffering. The coal trade insisted that it could handle the situation if it could be assured of transportation. And the tonnage moved during September and the early part of October seems to justify this claim.

It will be only a short time, with the heavy tonnage moving until the dock companies will begin to reduce receipts that they may not be overstocked. For it is possible, even likely, that there will be keen competition from the all-rail fields. Another factor which will enter into the total fuel tonnage of the Northwest, is the lignite of North Dakota. Production there will be sharply increased for the winter.

There have been some instances of transient dealers selling inferior coal at high prices, which resulted in complaint but the rank and file of regular dealers have kept their prices in line with their costs.

#### MILWAUKEE

October brought a little comfort to hard-coal consumers in the shape of several cargoes. This coal is being sold at the old figures, namely \$15.75 for egg, \$16 for nut, \$14 for pea, and \$11.50 for buckwheat.

An advance was made in screened Pocahontas, however. The retail price of this is now \$14.75 and the wholesale

price, \$13.25. Mine run is still sold at \$9.75 wholesale, and \$11.25 retail. Pittsburgh, Hocking and Youghiogheny were reduced 50c. or to \$9.75 wholesale, and \$11.25 retail. Pile run and screenings were cut 75c., the wholesale price of both sizes now being \$9. Other grades of soft coal remain unchanged. Bunker coal is down to \$7.50, the lowest it has been for some time.

The danger of a fuel shortage is being rapidly dissipated by heavy receipts. It is evident, however, that many hard-coal consumers will have to turn to soft coal. There is some talk of rationing the anthracite as it arrives. Thus far in October, 20 cargoes have been docked, aggregating 22,400 tons of anthracite, and 150,353 tons of soft coal.

September cargo receipts aggregated 438,343 tons of soft coal, making the receipts of cargo coal for the season 700 tons of anthracite, and 1,290,955 tons of soft coal. During the same period car-ferries brought 20,794 tons of anthracite, and 77,633 tons of soft coal. Rail receipts aggregated 50 tons of anthracite, and 162,746 tons of soft coal, making the grand total of hard and soft coal from all sources since the season of navigation opened up to Oct. 1, 1,746,878 tons.

## New England

### Heavy Reserves Postpone Big Buying Till January

**Large Volume of British and Southern Coals Depresses Market—Receipts Ahead of Same Period Last Year—Consumption Lower—Prices Drop.**

There is very little buying power left in the current market. The avalanche of British coal, together with heavier receipts of Southern coals, has increased reserves to so great an extent that there is hardly a chance of any comprehensive purchasing before January. Throughout this territory receipts have been much larger thus far this year than during the same period in 1921, while consumption has been notably less. It is very difficult to see, therefore, how there can be any improvement in trade conditions the next 30 to 60 days.

Prices are materially lower. Hampton Roads accumulations have reached 150,000 tons and receipts of Pennsylvania coals are declining with the market.

This week prices have slumped all along the line. From a \$9.15 asking

#### DULUTH

Unofficial reports place receipts of bituminous at the Head-of-the-Lakes at 1,500,000 tons during September. This indicates there will be opportunity to bring up enough coal if shipments continue. But dock men here may order a halt. Coal has commenced to accumulate on the docks because large consumers are not laying in supplies or making contracts. Dock men claim that last year they lost nearly \$500,000 through depreciation of large stocks carried over the winter.

Consumers are frankly waiting for a drop in prices. Youghiogheny and Splint are quoted at \$9.50 for lump, \$9 for run of pile and \$7.50 for screenings. Hocking is 25c. off for lump and run of pile and 50c. off for screenings. The market on Hocking screenings is long. Dock men say that there will be no further reductions.

The seamen's strike has had no visible effect on the movement of ships. At this port few leave the ships, but those who do are replaced easily. The same situation exists at lower ports, according to press reports.

The volume of receipts holds up. Last week 48 cargoes were received of which one was anthracite—the first since the strike started. Twenty-four are reported on the way, of which two are hard coal. Hard coal shipments may increase materially soon. No prices have been made as yet on anthracite, but they are expected to be above last year's level.

price on cars Boston for Inland delivery the spot market has eased off already to \$8.50 and less. At Hampton Roads \$7.35 has been quoted, with intimations that \$7 per gross ton f.o.b. vessel would be acceptable. In other words, the so-called Hoover fair price is now bettered by a full dollar a ton.

At Newport News and Norfolk the accumulation of coal over and above bottoms is increasing perceptibly day by day. While there are a few consumers here and there who have faith in a very short car-supply later on, the majority of buyers show no present interest in the spot market.

All the Pennsylvania grades are in most plentiful supply. All-rail receipts, however, are beginning to decline with the weakening market. From \$5.25 per net ton for fair grades the average figure has now dropped to \$4. Even the choicest quality coals on the Navy Acceptable list can now be had at \$4.50@ \$4.75. More than a few operators are faced with the necessity either of closing their mines or accepting much lower prices even than those now ruling.

Among wholesalers opinion seems still to be divided between those who feel that short car-supply will induce buying and those who say that even with equipment reduced, say to 50@60 per cent normal, the great bulk of central Pennsylvania output will be seeking buyers at less than current spot quotations. Meanwhile, the buyers themselves are in an attitude of "watchful waiting."



## Cincinnati Gateway

### Trade Watches Prices in Other Producing Fields

**As Quotations Recede and Rejections Increase, Byproduct, Gas and Domestic Coals Are Market Bulwarks—Some Still Base Hopes on Car Shortage.**

With quotations slipping a bit more rapidly, rejections increasing in volume and reports piling up of Northern terminals being clogged with coal—the first time that such a situation has obtained since last April—it can well be said that by-product, gas and domestic coals are the mainstays of the market at this writing.

Lake buying has temporarily ceased and with this highly competitive feature playing little part in the bidding for coal and on top of this many buyers discriminating against shipments that will not come up to grade, the trade has been looking about and there has been a disposition to keep a weather eye on what other producing fields are doing in the way of naming prices. Those jobbers and wholesalers who believe that the cream can be skimmed forever are still holding tight to their estimates based upon a scant supply of empty cars, but this feature can no longer be taken as a barometer.

#### LOW-VOLATILE FIELDS

##### NEW RIVER AND THE GULF

Buyers are trying to maintain control of the market by declining to buy until prices reach a lower level but are unable to dominate the situation as much in the West as in the East, according to conditions reflected in the New River field. The continued shortage of cars is preventing more of a break in prices. Most of the coal has been moving to the coast, since it is difficult to get smokeless through to Western markets where there is a strong demand for prepared sizes. The car supply is not averaging over 30 per cent.

Winding Gulf mines were greatly hampered during the final week of September by the extremely poor car supply. It was not possible to produce more than 100,000 tons representing less than 40 per cent of capacity. Even under normal conditions little coal from this region moves westward and now that these lines are congested less tonnage than ever is going west. Tide water is soft owing to the large volume of receipts.

##### POCAHONTAS AND TUG RIVER

Pocahontas coal is being diverted to Tidewater and the East, the Pennsylv-

vania and the Hocking having imposed an embargo on coal originating in the Pocahontas region owing to conditions at Lake piers. The car supply is holding back production to a material extent. The greatest difficulty is in getting empties back from Western lines, much equipment being under load at the Lakes.

Tug River mines are not producing more than 75,000 tons a week owing chiefly to a poor car supply. Buyers are showing a disposition to remain aloof from the market and to "bear" prices but a poor car supply is modifying the downward pressure.

#### CINCINNATI

So many mines are pouring out mine run with little or no attention to preparation that domestic business is still the keenest feature of the Cincinnati gateway. Lump coal is scarce, but on the other hand the retail buyers are shying at taking any great amount. They hold fast to the idea of small deliveries until the price comes down to a lower range.

The smokeless situation is hardest to fathom. The demand is good even though \$6@56.50 is the price on mine run and this in the face of the fact that Tidewater prices are \$1.50 and more below that. The nub of the situation seems to be that the Western embargoes are holding this back while the seaboard is getting more of this coal than it will absorb. Producers are still selling at the Hoover price, if you wait your turn in filling the order. Jobbers and wholesalers force the price to the limit when they have car numbers to offer.

There has been no change in the retail situation. A large tonnage is on its way down the Ohio in barges, but low water is holding the fleet at Iron-ton. It will take a couple of hundred thousand tons by water to make any visible effect on the present retail prices being charged here.

#### HIGH-VOLATILE FIELDS

##### KANAWHA

Although buyers in general were showing an inclination during the closing days of September to stay out of the market in the hope of securing fuel at lower prices, yet the scarcity of coal due to a poor car supply and congestion at terminals was tending to keep up prices. For domestic coal there was a strong demand. Although striking shopmen of the C. & O. are all back at work, the improvement in the transportation situation is not marked owing to the heavier movement of general freight.

##### LOGAN AND THACKER

Logan mines are still confronted with such poor transportation facilities that the output is not at best more than 40 per cent of potential capacity. Even though buyers were holding aloof there was more than enough demand to absorb the output. Although mines are supposed to ship a large tonnage to the Lakes, little headway was made in get-

ting coal through owing to congestion at piers. Prices were softer on fuel for Eastern delivery and comparatively little tonnage was being consigned there, and especially to Tidewater.

More than half the full time output of the Kenova-Thacker district is being lost through a shortage of cars. The best demand is in the West but difficulty is experienced in getting fuel through owing to embargoes. Lump is not to be had although prospective buyers are willing to pay almost any price for it.

#### NORTHEASTERN KENTUCKY

In the face of a demand somewhat restricted owing to the effort of buyers to force prices downward, prices are only fairly well established, with gas coal bringing a little more than steam. Inasmuch as operators are experiencing no difficulty in marketing mine run, no effort is being made to produce lump and egg. There has been little change for the better in the transportation situation.

## West

#### SALT LAKE CITY

The coal price probe continues. Many operators and retailers have been examined. Sessions are behind closed doors and there is no indication as to whether prosecutions will be ordered.

Retail business is quiet as a result of the grand jury examinations and warm weather, but mines are still behind on orders. Cars are in crop service. Stocks in the local yards are low. A retailer declared that instead of coal coming down he looked for another raise if the weather sets in cold. This would be necessary to keep the coal from going out of the state.

#### KANSAS CITY

The coal situation here is anomalous. Dealers expected a strong demand for domestic grades and they are not having it. This is because oil has displaced coal in many plants and because people expect a price drop. Steam coal is in good demand, however, and prices hold firm, but they are on a lower plane than costs of production would justify. One contract for Arkansas slack was closed recently at \$1.50 f.o.b. mines and as Arkansas mines make at least 50 per cent slack it will be readily seen that the operators must get a price for their lump to break even, as the cost of production is around \$3.75.

Some operators are selling at cost or below. This is hard to understand. Outside competition is not serious as railroads have embargoed most coal from Illinois, and besides, the market here is not strong enough to draw that coal.

#### DENVER

The report of operators for the week ended Sept. 23 shows a loss of 30.2 per cent production or 63,771 tons, on account of the car shortage on railroads in Colorado and northern New Mexico. Time lost due to mine disability was 2.2 per cent and "no market" 3.7 per cent. During August, 1922, a total of 950,618 tons of coal was produced in Colorado compared with 777,329 tons in August, 1921.

## News Items From Field and Trade

### ALABAMA

The **Palatine Mining & Development Co.**, of Chicago, is about to open a new mine in St. Clair County.

### COLORADO

The **Champion Mine** at Louisville, formerly operated by the International Fuel Co., has been leased for two years by the newly-organized **Sunland Coal Co.**, with offices in Denver. J. B. Hutchinson, president, George Fruth, vice-president and general manager, and Guy Houghtelin, secretary and treasurer, are the officers of the company. Frank Taylor and Joe Bonella are, respectively, in charge of the top and underground work at the mine. The **Barnett Fuel Co.**, of Denver, is the wholesale distributor for the Sunland company.

The **Leyden Coal Co.** has purchased its first electric locomotive, to be used for main haulage, temporarily, later for gathering. W. D. McCausland is general manager.

The **Big Horn Coal & Coke Co.** has replaced the shearing machines at Centennial mine with two alternating-current shortwalls. P. M. Peltier, president, removed the shearing machines to the company's state mine, near Erie.

Air-punchers at the Evans mine of the **International Fuel Co.** will be discarded. The mine is being wired preparatory to the installation of a universal control alternating current shortwall, the order for which has been placed.

### ILLINOIS

F. H. Manly, president and general manager of the **O'Gara Coal Co.**, has returned to Chicago after a recent business trip to New York.

C. L. Dering, wholesaler of Chicago, is in his office after a summer in the West.

The **Supreme Coal Co.**, just organized, has taken over a slope mine near Bush, Williamson County. The company is composed of W. D. George, president; C. J. Chamness, vice-president; John K. Fox, general manager and C. R. Schwartz, secretary-treasurer, all of Elkhart, which place will be the headquarters of the new company.

The **O'Gara Coal Co.**, of Chicago, is rapidly completing its brick office building at Harrisburg.

The **Venedy Coal Co.**, of Venedy, has been incorporated with capital of \$14,650 by Adolph Brockschmidt, H. Maschhoff, William Bergmann and Edward Petri.

The new mine owned by **Stone Bros.**, of Macomb, has been opened and coal has been brought to the surface. The shaft and airshaft have been completed. There is a 31-in. vein underlying the company's holdings.

The **Callaway County Coal Co.**, which had been operating a strip mine at Carrington, Mo., for the past nine years and which was recently dissolved, has sold the machinery and equipment to F. L. Crosby and Lester J. Miller, of Mexico, L. R. Herrick of Farmer City, G. L. McCutcheon of Canton, and Carter Norris of Fulton, Mo., who will operate a new corporation under the name of the **Cuba Coal Co.** at Canton. The new company has purchased 80 acres of land near Cuba. The new company expects to have the plant in operation by the middle of November.

**Williams & Buchanan**, a Mt. Carmel firm, has started the sinking of a new shaft near there. Pumps, supplies and other machinery are now being unloaded on the site and development work will be rushed as soon as coal is struck.

The **Louden Coal Co.**, Pinckneyville, has put a force of men to work cleaning up the mine and making it ready for immediate operation. New machinery is being installed and other improvements being made.

The **Coal Valley Mining Co.** has leased between 3,000 and 4,000 acres of land along Pope Creek, just north of Burgess, and will begin to prospect for coal. As soon as a good vein is found the tippie and other machinery in the company's mine at Matherville, which has been abandoned, will be moved to the new location and set up.

Prices named by Springfield operators and dealers will determine whether or not the City is to proceed further with its plan for the sinking of a municipal coal shaft. The city uses per annum about 30,000 tons, most of which is screenings. To pay the prices now asked for coal will add \$60,000 additional over last year. This would go far toward paying the expense of sinking a shaft at the river, where the city owns 40 acres of coal-bearing land.

Ownership of the Cantrall mine, Springfield, changed when its three new owners, **Edgar H. Buckley, Carl Elshoff and George W. Schwaner** took charge. The mine was formerly the property of the Springfield Marine Bank, Springfield.

### INDIANA

The **City Coal Co.** at Jasonville, near Sullivan, is completing the sinking of a shaft that will begin producing about Nov. 15 through a wood tippie containing a horizontal shaker screen and an inclined gravity screen. Three tracks run under the tippie which was designed and constructed by the **Krehbiel Co.**, of Chicago. The same engineering company is finishing a four-track steel tippie at Winkle, for the **Columbia Collieries Co.** It will have a capacity of about 350 tons an hour.

The **Linton-Mason Coal Co.**, of Linton, has filed a notice of dissolution with the secretary of state.

The **Freeman Fourth Vein Coal Co.** has been incorporated at Jasonville with a capital stock of \$10,000. The organizers of the company are J. F. Freeman, S. R. Thon and Theo Lynch.

For the purpose of mining coal the **H. D. & F. Coal Producing Co.** has been organized at Linton with a capital stock of \$10,000. The organizers are Ebert M. Hammach, S. Dickey and Herbert L. Forbes.

The **Cressmont Coal Co.** recently was organized at Valparaiso with a capital stock of \$25,000 for the purpose of mining coal. The organizers of the company are Alfred R. Putnam, Lucy D. Putnam and Carl F. Mason.

The **Insular Coal Co.** has been organized at Linton with a capital stock of \$180,000 for the purpose of entering the mining business. The organizers of the company are K. L. Ogle, Edward McQuade, T. S. Martin and Samuel Royse, all well known in the coal producing industry.

The judge of one of the Indianapolis superior courts denied recently a petition of the **National City Bank**, of Indianapolis, asking that a sale of the **Rose Hill Coal Co.** be set aside. The company was sold in July by William Schrolucke, receiver, and the sale was approved by Solon J. Carter, then judge of the same court.

### IOWA

J. C. Ward of Kirksville, Mo., is sinking a new coal shaft at Indianola for a syndicate of local business men. The syndicate has leased about 400 acres of land in the vicinity.

Approximately 100,000 tons of coal for state institutions in Iowa has been contracted for by the state board of control. Prices on all of the contracts range from \$4.41 for steam coal to \$6.65 for lump.

The **Diamond Block Coal Co.** of Des Moines, has been incorporated with capital of \$25,000. J. O. McClelland is the president and M. M. Swanson is the secretary and treasurer.

### KENTUCKY

The **Kentucky Gas Coal Co.** has incorporated with a capital stock of \$25,000, 250 shares of which L. P. Young, T. L. Young and J. S. Laurent hold three each.

Mine operators and law officers as well as guardsmen in charge of patrolling some of the non-union districts of western Kentucky around Madisonville, have asked for extra troops as there is too much territory to patrol for the number of men employed. It is claimed that union organizers from other sections of the country have been causing trouble, especially in their efforts to stop the strip mines or force them to organize. Men have just

been sent to the **Hawley-Isaacs Coal Co.** plant at Carbondale. Isley is also well guarded.

### MINNESOTA

Hibbing, Virginia and Eveleth, three iron range towns near Duluth, have filled their municipal coal needs for the winter, according to reports. They purchased an aggregate of 59,000 tons of Pocahontas screenings at a cost of about \$7.50 f. o. b. Duluth.

F. W. B. Coleman, formerly of the City Fuel Co., Minneapolis, is reported as likely to be named minister to the Balkan states. Mr. Coleman was a captain in the quartermaster's department during the war, and spent two summers in the coal lands of Spitzbergen prior to the war.

A report to the fuel committee named by the mayor of Minneapolis stated that there would be no chance of lower prices on hard coal, that on soft coal reductions were barely possible, that there is no possibility of a normal supply of anthracite coming to this section, and that a bureau of information on coal supply and price should be organized at once. Quick release of coal cars and increased efficiency of transportation are the two hopes expressed by the committee for averting a fuel famine.

Major C. J. Bailey, of the bureau of service of the I. C. C., has been working on the fuel situation in the Twin Cities. He will seek to push the movement of coal from the docks to the interior and will work for obtaining cars and for prompt handling of them when loaded.

### MISSOURI

"Gopher hole" mines are opening up all over Missouri, from St. Louis, in the eastern part of the state, to the Kansas and Iowa lines. These various new operations employ from one to as many as fifteen men and get out from 5 to 100 tons per day. Some of these little mines have long been abandoned and others operated at intervals since as far back as 1860. They could not be operated at a profit during the war time, fuel administration prices, but are coming back now with no price restriction. This was one of the causes recently for the Missouri Fuel Commission removing mine maximum prices. It caused the opening of new pits, with an increased production that brought coal prices \$2 under the fixed maximum. At present they are helping to serve a big population in central Missouri which formerly depended on Illinois coals together with some from Kansas. This much needed Kansas and Illinois coal is now moving north where it is a present necessity. A few of the activities are these: The **Central Missouri Coal & Mining Co.**, of Jefferson City; **G. H. Meeker and Herbert L. Hawkins** have opened up what is known as the old Hubbard coal mine, located on the Mills farm about seven miles east of Buncheon; the **Hawk Point Coal & Mining Co.** is planning to sink a shaft near Hawk Point; **Dr. C. C. Van Hall**, of St. Joseph, has leased 130 acres of coal at Harrisonville from Taylor Bros. and will sink a shaft.

The **Jones Coal Co.**, of Rich Hill, has announced that it will begin at once to clean up the shaft at the mine, south of town, and be ready to ship coal soon. About fifty men are employed.

The **Lincoln Coal Co.** of St. Louis, has been incorporated for \$10,000 by M. E. Sullivan, an old-timer in the wholesale trade.

E. Bryson Tucker, connected with the power and mechanical department of the Consolidation Coal Co., of Fairmont, W. Va., has resigned and is now connected with the A. S. Aloe Co., of St. Louis, importers and manufacturers of engineering instruments and supplies.

### NEW YORK

Two new coal concerns have recently set up business in Buffalo: **Edward J. Delaney**, formerly with F. J. McGuinness, in the Builders' Exchange, under the name of the **Manufacturers' Fuel Co.**; and **Henry C. Stone**, a former member of the city jobbing coal trade, in the new Lafayette Bldg., under the name of the **Continental Oil & Supply Co.**

### OHIO

Columbus becomes an important center in coal distribution under the ruling of Federal Administrator Spens, who designated Columbus as the headquarters for the Ohio district. Lieutenant Commander H. H. Bonson of Columbus has been appointed in charge of the Ohio district. Cincinnati becomes the headquarters for a district comprising all of Kentucky east of the eighty-fifth meridian.



The Speaks-Drais Coal Co., Columbus, has been chartered with a capital of \$10,000. Incorporators are Edna L. Speaks, James Loren, Jr., Helene C. Drais, Charles W. Drais and S. S. Speaks.

Because of a revival of rail and river business at Cincinnati there promises to be more tipples for the transfer of barge coal along the Kanawha. A. Ingersoll of the Cleveland & Philadelphia Coal Co. has established an office in Cincinnati to direct the transfer of coal brought down the river from the Kanawha mines. On an artificial wave over the canalized river route the company brought down 7,500 tons which was placed aboard railway cars at Cincinnati and moved to points where the rail congestion was not so stringent.

Operators who visited the Cincinnati market recently were: **Quin Morton**, of Charleston, C. A. Johnson, of Pineville, Ky., W. C. Dudley, of Lexington, Ky., with interests in the Hazard field, **Henry Harmon**, of the Ft. Dearborn Coal Co., of Tazewell, W. Va., and **Abner Lunsford**, of the Banner Fork Coal Co.

The E. J. Lewis Coal Co., Wellsville, has been chartered under Ohio laws with an authorized capital of \$150,000 to mine and sell coal as well as mine clay and manufacture clay products. Incorporators are G. L. Brokaw, D. B. Mackintosh, E. J. Lewis, John P. Wilson and S. D. Foster.

The Keystone Coal & Supply Co. has been incorporated at Warren with a capital of \$25,000 to deal in coal by L. C. Viets, Edmund E. Gettig, R. H. MacFarland, Myrtle Jeffries and Tom Walsh.

C. E. Bullard, general manager of the Hazard-Blue Grass Coal Corporation, has been a patient at Christ's Hospital, Cincinnati, where he submitted to an operation upon his tonsils.

## OKLAHOMA

The Welch Coal Co. is removing dirt on the Eaton farm, five miles west of Welch so it can put on a steam shovel which will arrive soon. A tractor and several scrapers are on the job. The company will employ a big force of men.

W. H. Fogle has opened a new strip pit on the J. A. Mills farm on Big Cabin Creek near Welch. Most of the coal from this mine will go to the Miami lead and zinc mining district.

## PENNSYLVANIA

"Not Guilty" was the verdict rendered in the Somerset County court last week by the jury that heard the murder charge against **Robert C. Wallace**, formerly a coal and iron policeman for the **Hillman Coal & Coke Co.**, at Jerome, accused of the killing on Aug. 22 of a striking miner.

**Henry E. Waters**, president of the Wilmore Basin Coal Co. and the Efficiency Coal Co., is in the Altoona Hospital in a critical condition with a fracture of the skull, as the result of an automobile accident.

Announcement has been made that **C. B. Sturgis**, president of the Pine Hill Coal Co., of 17 Battery Place, N. Y. City, has purchased the Oakhill colliery, of **Whitney & Kennerer**. Both collieries adjoin each other at Minersville, Pa.

One hundred men recruited in New York were brought in recently by the **Lehigh & Wilkes-Barre Coal Co.** for employment as anthracite mine workers. They are needed, according to a statement issued by the company, to supply a shortage of laborers resulting from the prolonged mine suspension. The newcomers will work as laborers in the mines. Since the end of the five months' suspension, production has suffered from a shortage of labor. The only method remaining to get back to normal production, the company official declared, was to hire men from cities outside of the anthracite region.

A charter has been issued to the **Pine Coal Corporation**, Philadelphia, with a capital of \$6,000. **William McMullen**, **Bryn Mawr**, is treasurer and the incorporators include **Mr. McMullen**, **J. Warner Rhine**, Philadelphia, and **Edwin S. Dixon, Jr.**, Ardmore.

The **Eureka Coal Co.** has filed notice of an increase in capital stock from \$10,000 to \$30,000. **Raymond F. Geinzer**, Allegheny County, is treasurer.

Land owners of Pennsylvania, including many mining companies, will be given 7,000,000 evergreens and hardwood trees for planting by the State Forestry Department this fall and next spring. The mining companies are among the most extensive planters of trees in the state today.

## TENNESSEE

The **Douglas Coal Mining Co.**, Nashville, A. Lackel, president, is planning development of the mines at Island, Ky., which will include new hoisting equipment, mine cars and locomotives, electrical machinery and other equipment.

## TEXAS

The **Empire Fuel Co.**, recently organized with a capital stock of \$5,000,000, and incorporated under the laws of Delaware, will begin operations immediately in the vicinity of Rockdale. The company owns 5,000 acres of lignite lands in Milam, Limestone and Freestone counties, which will be developed. **Adam H. Davidson**, of Dallas, is general manager of the company, while **A. E. Neisanger**, formerly efficiency expert of the **Dallas Power & Light Co.**, at Dallas, is vice-president and general superintendent of the plant. **M. R. Summers** is local manager at Rockdale. The company has taken over the Sparks interests in the Rockdale lignite field, consisting of 1,000 acres of land with five operating shafts and the **Santa Fe Lignite Co.**, of Rockdale, which owns 1,000 acres of land on the Gulf, Colorado & Santa Fe Ry., eight miles east of Rockdale. The company also owns 3,000 acres of undeveloped lignite lands in Limestone County.

## WEST VIRGINIA

The **Eagle Alma Coal Co.** has been organized by Huntington coal men with a view to operating in territory adjacent to Huntington, this company having a capital stock of \$750,000. Offices for the time being will be at Huntington. Active in organizing this concern were: **E. W. Bowers**, **W. E. Tompkins**, **R. C. Taylor**, **O. Bowers** and **N. P. Tompkins**, all of Huntington.

Organization of the **Stanley Coal Co.** presages the development of additional coal land in Monongalia County. This company, with a capital stock of \$100,000, will have its headquarters at Morgantown. Leading figures in this company are: **Charles W. Ream**, **Stanley Ashby**, of **Crellin, Md.**; **Samuel A. Kendall, Jr.**, **John W. Kendall**, of **Meyersdale, Pa.**; **J. L. Kendall, Sr.**, **Pittsburgh**.

Officials of the union in sub-district 4 of district 17, claim that all but six of the companies in that sub-district have entered into an agreement with the union. Five companies not parties to the contract are in Monongalia County and one in Harrison, the one in Harrison being the **Hudson Coal Company** which declined to sign when there was no assurance given by the union that men who had worked during the strike would be protected. In sub-district 3 there are many companies who have not become parties to the union contract and who are operating their mines on the open-shop plan. The **West Virginia Coal & Coke Co.** and numerous other companies on the Charleston Division of the **B. & O.** come within that category and all of such companies are operating on a satisfactory basis.

There were a good many fatal accidents connected with the mining industry of West Virginia during August, twelve meeting death in or around the mines, with thirteen deaths due to falling coal, timber and slate. Mine car accidents were responsible for the death of four and one miner was killed by electrical shock. Three were killed in motor accidents and one in an explosion. Outside the mines one miner was killed in a mine car accident, two from electrical shock and three from miscellaneous causes.

Governor Morgan named the following well-known mining men to represent West Virginia at the annual meeting of the American Mining Congress: **R. M. Lambie**, chief of the West Virginia Department of mines; **Charles E. Krebs**, mining engineer, Charleston; **Everett Drennen**, president **West Virginia Coal & Coke Co.**, Elkins; **J. G. Bradley**, former president of the National Coal Association and president of the **Elk River Coal & Lumber Co.**, Dundon; **S. A. Scott**, general manager **New River Company**, Macdonald; **A. R. Beisel**, general manager **Island Creek Coal Co.**, Logan; **Walter Thurmond**, president, **Logan Operators' Association**, Logan; **W. N. Cummings**, **Red Jacket Consolidated Coal Co.**, Red Jacket; **J. J. Huddleston**, Excelsior; **W. E. E. Koepfer**, secretary **Pocahontas Operators' Association**, Bluefield; **W. M. Wiley**, general manager **Boone County Coal Corporation**, Sharples; **George T. Watson**, Consolidation Coal Co., Fairmont; **C. E. Hutchinson**, Hutchinson Coal Co., Fairmont; **Josiah Keeley**, general manager, **Cabin Creek Consolidated Coal Co.**, Kayford.

Some of the operators of northern West Virginia who signed an agreement with the union are beginning to experience again the annoyance of having unlawful strikes to deal with. One of the first was that during the latter part of September at the **Morgan mine** of the **Virginia & Pittsburgh Coal Co.**, in Marion County, in which 100 miners participated after two cutters had been discharged. These cutters had failed to live up to their agreement. When a ruling was made that their discharge was warranted the miners struck as a protest.

At the **Becco mine** of the **Buffalo-Eagle Coal Co.** in the Logan field, a demons ration was recently made of the coal loader manufactured by the **American Coal Loading Machine Corporation**, of Huntington. With operation on a sidewall of coal lightly shot, it had no difficulty in loading continuously at a rate somewhat better than a ton a minute with one man operating the machine and two men trimming the cars, a locomotive spotting and removing the wagons.

## BRITISH COLUMBIA

### COAL OUTPUT FOR AUGUST, 1922

#### Vancouver Island District.

Mine.	Net Tons.
Western Fuel Corp., Ltd., Nanaimo.	85,232
Canadian Collieries (D) Ltd.,	
Comox .....	48,118
Extension .....	21,044
South Wellington .....	7,417
Granby Cons. M. S. & P. Co. ....	22,027
Nanoose Wellington Collieries....	10,315
Old Wellington .....	1,192

Total ..... 195,345

#### Nicola-Princeton District.

Middlesboro Collieries .....	9,540
Fleming Coal Co. ....	4,676
Coalmont Collieries .....	18,059
Princeton Coal & Land Co. ....	2,595

Total ..... 34,870

Grand total ..... 230,215

That there will be another producing coal mine on Vancouver Island soon would seem assured, as **J. J. Grant**, former manager of the **Nanoose-Wellington Collieries**, has secured a considerable acreage adjacent to the old "Jingle Pot" holdings, near Nanaimo, and is reported to have pushed development close to the shipping point already.

## ONTARIO

**J. A. Ellis**, fuel controller for Ontario, has fixed the Toronto price for anthracite at \$15.50 per ton, and issued orders that dealers shall not deliver more than one month's supply at a time to a customer and shall not make deliveries to cellars already containing a two weeks' supply of coal. The order does not apply to substitute fuel, nor to the municipalities outside Toronto. The controller states that other municipalities may apply to him to regulate fuel distribution and that he will thereupon see that similar provisions are made applicable to such localities.

## WASHINGTON, D. C.

The **United States Civil Service Commission** announces an open competitive examination for structural steel work draftsman. Two vacancies at the Naval Operating Base, Pearl Harbor, Hawaii, one at \$7.20 per diem and the other at \$7.60 per diem, each with an additional allowance of 96c. per diem while employed at the station; a vacancy in the Public Works Department, Naval Station, St. Thomas, Virgin Islands, at \$6.80 per diem; and vacancies in positions requiring similar qualifications, including the Departmental Service, Washington, at these or higher or lower salaries, will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer or promotion. In the absence of further notice, applications for this examination will be received until the hour of closing business on Dec. 29, 1922. If sufficient eligibles are obtained, the receipt of applications may be closed before that time, of which due notice will be given.

**O. P. Hood**, chief mechanical engineer of the United States Bureau of Mines, will return to his office Oct. 16, after having spent three months in Europe on official business. Mr. Hood visited England, Ireland, France, Italy and Germany to study low temperature carbonization, combustion problems in general, smoke abatement and utilization of lignite and peat.

## Traffic News

The Illinois Central R.R. will begin construction of a line into Madisonville, Ky., in the spring. The I. C. has purchased the Kentucky Midland roadbed from Central City toward Madisonville, but the I. C. C. must approve before construction may begin. Coal operators think that this should improve traffic conditions materially in the Madisonville section, which depends entirely on the L. & N., at the present time. Madisonville is the metropolis of the western Kentucky coal country.

The freight rate case filed by the Southern Ohio Coal Exchange against all carriers in the Ohio field on their reduction of rates on coal shipments and on which a favorable decision was given to the exchange, but in which the I. C. C. took a hand and ordered it opened for rehearing will come up in Columbus, Oct. 17. The date on the rehearing was set for September, but was postponed upon motion of railroads. The C. & O. freight case, also initiated by the Southern Ohio Coal Exchange, will likely be merged with the other case as the questions at issue are connected.

## Obituary

William Vipond, one of the oldest coal merchants of Montreal, died recently at the age of 76. He came to Montreal in 1892 when he engaged in the coal trade, carrying on a successful business for thirty years.

The death is announced in Bowmanville, Ont., of William Cann, late of the coal firm of McClellan & Co., Ltd. Deceased, who was 80 years of age, was well known in the Ontario coal trade and retired from active business in 1915.

Lucius H. Curtis, vice-president of the Standard Coal Co., Salt Lake City, Utah, died at Los Angeles late in September, following a lingering illness. He was well known in business, social and political circles.

## Recent Patents

**Treatment of Materials Containing Coal.** Edwin Edser, Henry L. Sulman, and Frank B. Jones, London, England, assignors to Minerals Separation North American Corp., New York City, 1,418,547. June 6, 1922. Filed Nov. 12, 1920; serial No. 423,610.

**Coal Car.** Adolf Leu, Hoboken, N. J., 1,418,722. June 6, 1922. Filed Jan. 19, 1922; serial No. 530,282.

**Hoisting Mechanism.** Daniel F. Lepley, Connellsville, Pa., 1,419,153. June 13, 1922. Filed Jan. 22, 1921; serial No. 439,207.

**Mine-Car Truck.** John M. Cameron, Dorchester, Va., 1,419,218. June 13, 1922. Filed May 27, 1921; serial No. 473,134.

**Operating Mechanism for Mine Doors.** Charles E. Carter, Gillespie, Ill., 1,419,357. June 13, 1922. Filed April 21, 1921; serial No. 463,241.

**Coal Breaker.** Frank Pardee, Hazleton, Pa., 1,419,407. June 13, 1922. Filed March 1, 1919; serial No. 280,025.

**Mine-Car Brake.** Stanley J. Sprock and Robert Dunn, Clarksville, Pa., 1,419,773. June 13, 1922. Filed March 30, 1921; serial No. 456,988.

**Coking Coal.** Franz Puening, Pittsburgh, Pa., 1,419,908. June 13, 1922. Filed Nov. 30, 1907; serial No. 204,578.

**Crusher and Pulverizer.** Wm. M. Davidson, St. Louis, Mo., assignor to Williams Patent Crusher & Pulverizer Co., St. Louis, Mo., 1,420,021. June 20, 1922. Filed Nov. 3, 1921; serial No. 512,487.

**Crusher and Pulverizer.** Alexander Gillespie, Pittsfield, Ill., assignor to Williams Patent Crusher & Pulverizer Co., St. Louis, Mo., 1,420,031. June 20, 1922. Filed Oct. 28, 1921; serial No. 511,183.

**Acetylene Miner's Lamp.** Carl H. Neushs, Baker, Ore., 1,420,133. June 20, 1922. Filed Nov. 30, 1921; serial No. 518,838.

**Low-Temperature Distillation.** Arthur C. Michie, Newcastle-upon-Tyne, and Edmund G. Weeks, Northumberland, England, assignors to Charles H. Merz and William McLellan, both of Westminster, London, England, 1,423,134. July 18, 1922. Filed Nov. 12, 1919; serial No. 337,573.

**Crusher and Pulverizer.** Milton F. Williams, St. Louis, Mo., assignor to Williams Patent Crusher & Pulverizer Co., St. Louis, 1,420,354. June 20, 1922. Filed Oct. 28, 1921; serial No. 511,063.

**Plant for Utilizing Pulverized Solid Fuels.** Andrea Assereto and Lorenzo Caccioppoli, Savona, Italy, 1,420,904. June 27, 1922. Filed May 15, 1919; serial No. 297,384.

**Method of Treating Pulverized Fuel.** Ralph E. H. Pomeroy, Canton, Ohio, 1,423,150. July 18, 1922. Filed Dec. 14, 1921; serial No. 522,360.

**Apparatus for the Liquid-Fuel Firing of Steam Boilers.** William M. Burdon, Bellshill, Scotland, assignor to Burdons, Ltd., Bellshill, Scotland, 1,423,183. July 18, 1922. Filed April 7, 1920; serial No. 372,004.

**Washer for Mine-Car Wheels.** Robert F. Phillips and Louis J. McCloskey, Pittsburgh, Pa., assignors to Phillips Mine & Mill Supply Co., Pittsburgh, Pa., 1,423,877. July 25, 1922. Filed Jan. 30, 1922; serial No. 532,723.

**Automatic Gate Mechanism for Elevator and Mine Shafts.** Charles Drum, California, Pa., 1,423,919. July 25, 1922. Filed Dec. 19, 1919; serial No. 346,036.

**Coal-Handling Device.** Harry D. Bartlett, Chicago, Ill., 1,423,986. July 25, 1922. Filed Feb. 21, 1921; serial No. 446,560.

**Mining Machine.** Edmund G. Morgan, Morgan Park, Ill., 1,424,114. July 25, 1922. Filed June 27, 1910; serial No. 569,168. Renewed Jan. 7, 1918; serial No. 210,796.

**Mine Fire-Fighting Apparatus.** John Klewanec, Royalton, Ill., 1,421,496. July 4, 1922. Filed May 25, 1920; serial No. 384,080.

**Worm Drive for Electric Cars, Especially Mine Locomotives.** Gottwalt Muller, Berlin-Weissensee, Germany, 1,421,534. July 4, 1922. Filed Oct. 7, 1921; serial No. 506,139.

**Support for Mining Machines.** Thomas E. Pray, Chicago, Ill., assignor to Goodman Mfg. Co., Chicago, Ill., 1,421,557. July 4, 1922. Filed May 6, 1920; serial No. 379,210.

## Trade Literature

**Electrically Operated Pumps.** General Electric Co., Schenectady, N. Y. Bulletin 48,023. Pp. 59; 8 x 10 in.; illustrated. Shows the feasibility of applying electric motors for driving pumps of all kinds and points out the considerations involved in selecting the best type and construction of motor and control for different installations.—Advertiser.

**Hand Book of the Electric Power Club of Cleveland, Ohio.** Pp. 284; 4 x 6 in.; illustrated. Contains definitions, symbols, general engineering recommendations and other information needed by users and purchasers of electric power apparatus and control equipment. Single copies will be given free to consulting engineers, electric light and power companies, rated electrical contractors and educators; otherwise the charge is 50c. per copy.

**Jeffrey Portable Belt Conveyor.** The Jeffrey Mfg. Co., Columbus, Ohio. Bull. 369. Pp. 7; 7 x 10 in.; illus. Describes how the conveyor may be made to serve as an extension to storage pile in connection with a Jeffrey portable car unloader.—Advertiser.

**The Terry Turbine.** The Terry Steam Turbine Co., Hartford, Conn. Pp. 40; 8 x 11 in.; illus. Describing the non-condensing and condensing Terry turbines. A short history of the steam turbine precedes the description.—Advertiser.

**American Cast Iron Storage Tank.** Conveyors Corporation of America, Chicago, Ill. Pp. 8; 4 x 8 in.; illus. Among the uses to which this tank is particularly adapted are ash storage, containing the discharge from conveyors of various types, and for coal storage around power plants and coal yards.

**Synchronous Motors.** Allis-Chalmers Mfg. Co., Milwaukee, Wis. Bull. 1124. Pp. 20; 8 x 10 in.; illus. Describes the use of these motors for driving mine fans and motor generator sets.—Advertiser.

**Eliminating Waste in Blasting.** by N. S. Greensfelder. Hercules Powder Co., Wilmington, Del. Pp. 48; 6 x 9 in.; illus. Among the subjects touched on in this book are: Planning the work, drilling, choice of explosives, use of larger sizes, distribution of explosives, advantages of No. 8 blasting caps, use of stemming.—Advertiser.

**Protection up to Date.** The Cutter Co., Philadelphia, Pa. Pp. 98; 4 x 7 in.; illus. Describes the uses to which the I-T-E circuit breaker or U-Re-Lite may be put, with tables on voltages and prices.

**Engineering Bulletin on Pneumatic Collecting and Conveying.** B. F. Sturtevant & Co., Hyde Park, Boston, Mass. Pp. 72; illustrated; charts and tables.

**Willson Safety Goggles and Dustite Respirators.** Willson Goggles, Inc., Reading, Pa. Pp. 15; 5 x 8 in.; illustrated. Describes goggles for different kinds of work, and the dry and wet filter types of dustite respirator, with and without relief valve.

## Association Activities

### Fayette-Greene Coal Producers' Association

Permanent organization of the association was affected recently and plans for the work of the organization were discussed in detail. R. W. Gardiner, commissioner of the Pittsburgh Coal Producers' Association, addressed the new association at its Uniontown meeting on the various phases of association work and the benefits to be derived therefrom. He spoke briefly of the valuable work being accomplished by the Pittsburgh association and touched upon new legislation which has just been enacted affecting the coal industry.

There was a large attendance at the meeting who indorsed the tentative association which was formed the latter part of July and which was made permanent. Headquarters will be opened in Uniontown shortly and the organization will begin effective work. George Whyel is president, W. W. Parshall vice-president, and E. D. Brown secretary and treasurer. The detail work of the association will be in charge of an executive secretary.

### National Coal Association

The Cost Accounting Committee of the Association, appointed as of June 1, 1922, is composed of the following: Brewster, T. T. (chairman), president, Mt. Olive & Staunton Coal Co., St. Louis, Mo. Barker, G. H., vice-president, Maynard Coal Co., Hayden-Clinton Bldg., Columbus. Barnum, Walter, treasurer, Pacific Coast Co., 50 Church St., New York City. Honnold, F. C., secretary, Coal Operators' Associations, 2017 Fisher Bldg., Chicago. Huff, W. H., president, Victor-American Fuel Co., Denver, Col. Randall, Robert, general manager, Consolidated Coal Co. of Saginaw, Saginaw, Mich. Sampson, W. J., president, Witch Hazel Coal Co., Youngstown, Ohio. Allport, J. H., Barnesboro, Pa. Bowles, A. K., general auditor, Consolidation Coal Co., 67 Wall St., New York City. Drennen, E., president, W. Va. Coal & Coke Co., Elkins, W. Va. Francis, J. D., vice-president, Island Creek Coal Co., Huntington, W. Va. Hornberger, J. B. L., vice-president and comptroller, Pittsburgh Coal Co., Pittsburgh. Johnson, W. L., A., secretary, Southwestern Interstate Coal Operators' Association, Kansas City, Mo. Lewis, T. L., secretary, New River Coal Operators' Association, Charleston, W. Va. McKinney, W. D., secretary, Southern Ohio Coal Exchange, Columbus. Norris, R. V., 524 Second Natl. Bank Bldg., Wilkes-Barre, Pa. Ramsay, Erskine, first vice-president, Pratt Consolidated Coal Co., Birmingham, Ala. Reed, W. B., secretary, National Coal Association, Washington, D. C. Watkins, C. Law, president, Watkins Coal Co., Cresson, Pa.

## Coming Meetings

**Kentucky Mining Institute** will hold its annual meeting Nov. 3 and 4 at Seeback Hotel, Louisville, Ky. Secretary, Elizabeth C. Rogers, Lexington, Ky.

**The National Industrial Traffic League** will hold its annual meeting Nov. 15 and 16 at the Hotel Commodore, New York City. Secretary, J. H. Beek, Chicago, Ill.

**Coal Mining Institute of America** will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., 911 Chamber of Commerce Bldg., Pittsburgh, Pa.

**National Exposition of Power and Mechanical Engineering** will be held at the Grand Central Palace, New York City, Dec. 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.

**American Gas Association** will hold its annual meeting Oct. 23-28 at Atlantic City, N. J. Secretary-Manager Oscar H. Fogg, 130 East 15th Street, New York City.

**Canadian Institute of Mining and Metallurgy**, annual Western meeting Nov. 15-17, at Vancouver, B. C. Secretary-Treasurer, G. C. Mackenzie, Montreal, Quebec, Can.